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No. 61



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No. 61

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USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS

BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 61

This serial publication contains abstracts of articles from USSR and Eastern Europe scientific and technical journals on the specific subjects reflected in the table of contents.

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CONTENTS	PAGE
I. BIOMEDICAL	
Aerospace Medicine.....	1
Agrotechnology.....	5
Bioacoustics.....	26
Biochemistry.....	29
Biophysics.....	31
Entomology.....	45
Environmental and Ecological Problems.....	47
Epidemiology.....	48
Food Supply.....	49
Hydrobiology.....	50
Immunology.....	52
Industrial Toxicology.....	56
Marine Mammals.....	62
Microbiology.....	63
Military Medicine.....	67
Molecular Biology.....	68
Pharmacology.....	71
Physiology.....	73
Public Health.....	77
Radiobiology.....	81
Therapy.....	86
Veterinary Medicine.....	93
II. BEHAVIORAL SCIENCES	
Engineering Psychology and Ergonomics.....	103

CONTENTS (Continued)

General Psychology	105
Psychiatry	106

I. BIOMEDICAL
Aerospace Medicine

USSR

UDC 612.119-08.612.041.47

SHVETS, V. N., and PORTUGALOV, V. V., Institute of Medical-Biological Problems, Ministry of Health USSR, Moscow

HEMOPOIETIC FUNCTION IN ANIMALS UNDER HYPOKINESIA

Leningrad ARKHIV ANATOMII GISTOLOGII I EMBRIOLOGII in Russian Vol 71 No 9
Sep 76 signed to press 27 Feb 76 pp 42-50

(Text-English language abstract supplied by authors) Materials on the state of hemopoietic organs and peripheral blood of mice and rats kept under hypokinetic conditions for from 1 to 60 days are presented. The changes occurring in the lymphoid tissue (involution of thymo-lymphatic apparatus, lymphopenia and neutrophilosis) have been shown to result from the state of stress. In the bone marrow of animals there occurs activation of erythropoiesis (erythroblasts-polychromatophilic normoblasts) at early (up to 15 days) terms of hypokinesia, followed by its inhibition on the 60th day of the experiment. The study of the kinetics of the amount of hemopoietic stem cells in the spleen and bone marrow of the femur of mice kept under hypokinesia for 1-45 days suggests the amount of stem cells in the spleen 1/2

USSR

SHVETS, V. N., and PORTUGALOV, V. V., ARKHIV ANATOMII GISTOLOGII I EMBRIOLOGII Vol 71 No 9 Sep 76 pp 42-50

to decrease exponentially while in the bone marrow it changes undulatorily with the maximum on the 1st-3d and 30th-45th days of hypokinesia. Shifts in the number of the stem cell population are accompanied by changes in the direction of their differentiation. The stem cells of the bone marrow manifest higher potencies to form colonies of the erythroid type as compared with the stem cells of intact animals. Possible mechanisms underlying the inhibition of lymph- and erythropoiesis and changes of the stem cell differentiation from the myeloid way to the erythroid way under conditions of hypokinesia are discussed. Figure 1; Table 1; References 44: 19 Russian, 25 Western.

2/2

USSR

UDC 591.434.2:591.442)-08:612.014.47)-08:599.324

KUKLINA, O. I., and MALYGINA, YE. I., Department of Normal Anatomy, and Department of Pharmacology and General Toxicology, Leningrad Sanitary-Hygiene Medical Institute

EFFECTS OF GRAVITATION STRESSES ON MORPHOLOGICAL CHANGES OF THE LYMPHATIC BED OF COECUM OF GUINEA PIGS UNDER CONDITIONS OF BLOCADE OF M-CHOLINOREACTIVE SYSTEMS

Leningrad ARKHIV ANATOMII GISTOLOGII I EMBRIOLOGII in Russian Vol 71 No 9 Sep 76 signed to press 15 Sep 75 pp 50-54

(Text-English language abstract supplied by authors) The work has been performed in the material taken from 40 guinea pigs whose lymphatic bed was injected by Gerota's mass. The material was treated by macro-microscopic methods and the method of luxmetry. A single exposure to gravitation stress of ventro-dorsal direction caused pronounced morphological changes in all links of the lymphatic bed of the guinea pig's coecum. Exclusion of the central and peripheral M-cholinoreactive systems of the organism by means of scopolamin in dose 50 mkg/kg had a protecting effect on the coecum lymphatic bed in the following exposure to gravitation stress. Figures 3; References 5 (Russian)
1/1

USSR

UDC 611-01-08:612.014.47)-092.9

SIGALEVICH, D. A., and SHUMAKOV, G. F., Department of Human Anatomy, Kursk Medical Institute

HYPOKINETIC CHAMBER

Leningrad ARKHIV ANATOMII GISTOLOGII I EMBRIOLOGII in Russian Vol 71 No 9 Sep 76 signed to press 20 Oct 75 pp 96-98

(Text-English language abstract supplied by authors) The proposed construction of the hypokinetic chamber provides a sufficient restriction of the motor activity in a natural position of the animal for investigating the state and functions of organs and systems under hypokinesia, does not disturb the function of vitally important organs, does not misrepresent the results of experiments, allows change in size of the chamber according to the changing size of the animal. The chamber is simple in use, durable, hygienic, and requires the least labor and time to take care of animals. Figures 2; References 7 (Russian). A general view of the chamber, with a rat inside, is shown.

1/1

USSR

UDC 612.014.482.5 + 613.693

TIKHOMIROV, YE. P., BARER, A. S., GNOYEVAYA, N. K. and STOKLITSKIY, A. YU.

A METHOD FOR THE PREVENTION OF ORTHOSTATIC INSTABILITY

Moscow AVT. SV. SSSR [USSR Author's Certificates] in Russian, No 432902, 15 Dec 1974

[From REFERATIVNYY ZHURNAL, BIOLOGIYA, SVODNYY TOM, M, N, P, R, F, No 3(III) 1976 Abstract No 3R458P, Author's Abstract]

[Text] The purpose of this invention is to improve the state of health of the cosmonaut during the performance of physical exercises of increased complexity, and also to assure economy of time of the cosmonaut for carrying out the preventive measures. To do this, the physical exercises are performed with accent on the muscle groups of the lower extremities; simultaneously, a measured reduced negative pressure is applied to the lower half of the trunk.

1/1

USSR

UDC 612.014.482.5 + 613.693

ROGATINA, L. N., KARAGODINA, A. M., PODDUBNAYA, L. T. and PANCHENKO, V. A.

PRESERVATION OF HUMAN EXCRETIONS

Moscow SB. NAUCHN. TR. MOSK. NII VAKTSIN I SYVOROT [Collection of the Scientific Works of the Moscow Scientific-Research Institute of Vaccines and Serums] in Russian, No 24, 1975 pp 162-165

[From REFERATIVNYY ZHURNAL, BIOLOGIYA, SVODNYY TOM, M, N, P, R, F, No 3(III) 1976 Abstract No 3R480 by A. V. Sterlikov]

[Text] Several mixtures were studied for possible use as urine preservatives in the regeneration of drinking water: 1) copper sulfate plus Perhydrol; 2) chromic anhydride plus sulfuric acid; 3) sulfuric acid plus Perhydrol; and 4) paranitrophenol and formalin plus NaOH. The best results were obtained with the use of mixture (1) in a concentration of 2 ml/l, and mixture 2) in a concentration of 2.49 ml/l. The condensate obtained from urine in this case corresponded to GOST drinking water standards as regards microorganism content, transparency and smell. Also investigated was the possible use of organic copper salts in the preservation of fecal matter; and here the data indicated not only the preservative, but also the bactericidal and deodorizing action of the preparation studied.

1/1

USSR

DROVETSKIY, YU. I., ZARUDNYY, L. B. and CHICHETKIN, V. I.

CHOICE OF AN EFFECTIVE MEANS FOR DRYING THE WASTES OF A BIOCOMPLEX, WITH
ALLOWANCE FOR THEIR THERMODYNAMIC CHARACTERISTICS

Moscow KHIMICHESKOYE MASHINOSTROYENIYE No 4, 1975 pp 110-115

[From REFERATIVNYY ZHURNAL, BIOLOGIYA, SVODNYY TOM M, N, P, R, F, 5-333, 76,
Abstract No 5R568 by A. V. Sterlikov]

[Text] An experimental determination is made of the hygroscopic, hydro-thermal, sorption-structural and other characteristics of a KK biocomplex--human feces, Chlorella pastes and vegetable wastes--as objects of drying. On the basis of the data obtained, a method was selected for drying the wastes of a KK biocomplex; this is done with the use of ultra-high frequency energy. A special reactor for the drying is designed. A criterion equation is derived which makes possible the modeling and automation of the waste-drying process. The effectiveness of the design of the reactor was checked by tests under conditions of a full-scale experiment. Biblio. 4. USSR, Moscow, Institute of Chemical Machine Building.

1/1

USSR

OBEZLIYEV, A. O., BABAYEV, A. G., and MURADOV, B. K., Order of Labor's Red Banner Institute of the Deserts, Academy of Sciences Turkmen SSR

PLANTING DENSITY OF FORAGE CROPS GROWN ON EOLIAN SANDS IN TURKMENISTAN

Ashkhabad PROBLEMY OSVOYENIYA PUSTYN' in Russian No 2 1976 signed to press 21 May 75 pp 18-24

(Abstract) Optimal planting density of fodder crops depends basically on the growing zone, the economic importance and the biological peculiarities of the plant. No pertinent information on fodder crops was available for growing them on eolian sands, hence the authors undertook field trials (1971-1973) to find the optimal planting density for corn and two sorts of sorghum (Orange-160 and Turkmen-1). When the fodder was grown on eolian sands with an interrow distance of 60 cm, and row spacing of 50, 30, and 20 cm, with 2 plants per nest, the greatest green mass yield of Dneprovskaya-200 corn was obtained with an area of 60 x 30 cm; for sorghums Orange-160 and Turkmen-1, 60 x 20 cm, with density of plants, 111.1 and 166.6 thousand/ha. The average yield of green mass of the wheat for the three 1/2

USSR

OBEZLIYEV, A. O., BABAYEV, A. G., and MURADOV, B. K., PROBLEMY OSVOYENIYA PUSTYN' No 2 1976 pp 18-24

years was 415.7 centners/ha, of the sorghum Orange-160, 380 c/ha, and of sorghum Turkmen-1, 601.5. The root system of the fodder on the sands, independently of planting density, reached 1.5 m, and the amount of air-dried root mass at the end of vegetation was 135 centners/ha. Tables 3; References 10 (Russian).

USSR

UDC 575.12:576.312.32:633.17

SINIGOVETS, M. YE., All-Union Scientific Research Institute of Phytopathology, Moscow Oblast

TRANSMISSION OF RUST RESISTANCE FROM AGROPYRON TO TRITICUM BY CHROMOSOME ADDITION AND SUBSTITUTION

Moscow GENETIKA in Russian Vol 12 No 9 Sep 76 signed to press 12 Dec 75
pp 13-21

(Text-English language abstract supplied by author) By means of back-cross of *Triticum* x *Agropyron* hybrids ($2n=56$) to the variety Saratovskaya 29 of common wheat two lines of wheat were obtained with additional *Agropyron* chromosomes. These two lines proved to be resistant to *Puccinia recondita*. Besides, one line was obtained resistant to both *Puccinia recondita* and *Puccinia glumarum* ($2n=22+44$). In all these lines resistance to rust is controlled by non-homologous *Agropyron* chromosomes. Using the disturbances in meiosis in wheat lines with additional chromosomes, one of the *Triticum* chromosomes was successfully substituted with an *Agropyron* chromosome controlling the resistance to *Puccinia recondita* and to *P. glumarum*. The *Agropyron* chromosome compensated successfully for the missing *Triticum* chromosome. Figure 1; Tables 5; References 13: 4 Russian, 9 Western.

USSR

UDC 575.12:633.1

GULYAYEV, G. V., and KYZLASOV, V. G., Scientific Research Institute of Agriculture of the Central Rayons of the Chernozem Zone, Moscow Oblast

STRENGTHENING OF TRANSGRESSIVE MUTABILITY OF THE CHARACTERS OF SPIKE PRODUCTIVITY IN THE PRESCRIBED DIRECTION IN HYBRIDS OF WINTER WHEATS WITH SPRING WHEATS

Moscow GENETIKA in Russian Vol 12 No 9 Sep 76 signed to press 17 Dec 75
pp 5-12

(Abstract) The authors employed, as starting material, hybrids F_2 and F_3 which were obtained by crossing the highly-productive winter wheats Bezostaya 1 and Rannyaya 12 with the less-productive sorts Skala and Saratovskaya 29. Hybridization in the present study consisted in crossing winter wheats of an intensive type possessing a combination of valuable traits with better, widely-distributed spring sorts. Hybrids were produced by limited-free pollination of castrated spikes of the maternal form under parchment insulators. However, results indicated that the probability of producing forms with high spike productivity in hybrid populations, obtained by the $1/2$

USSR

GULAYEV, G. V., and KYZLASOV, V. G., GENETIKA Vol 12 No 9 Sep 76 pp 5-12

pairing indicated, was significantly less than in backcrosses from pairing the corresponding hybrids of F_1 with a productive winter parental sort. Figures 3; Tables 3; References 3 (Russian).

2/2

USSR

UDC 575.24+633.34

BAZAVLUK, I. M., and YENKEN, V. B., Institute of Cytology and Genetics, Siberian Department, Academy of Sciences USSR, Novosibirsk

MINOR MUTATIONS AS A METHOD OF INCREASING THE CONTENT AND IMPROVING THE QUALITY OF PROTEIN IN SOYA BEANS

Moscow GENETIKA in Russian Vol 12 No 10 1976 signed to press 10 Nov 75 pp 46-54

(Text-English language abstract supplied by authors) A large number of mutants with significantly increased protein content was obtained by gamma-irradiation of soya beans of the variety Amurskaya 262 and by their subsequent selection for minor mutations in M_2 . For seven years some of these mutants surpassed the initial variety in protein content by 3-6%, the most outstanding mutant BM-64 surpassed it by 5-8% (on the average, by 6.3% throughout the observation period). Many mutants are characterized by a decreased productivity, though some forms have productivity close to that of the initial variety. Mutants with high protein content are found to contain increased amounts of water-soluble albumins (which represent the most valuable protein fraction) and amino acids (in particular, lysine and threonine). The data obtained indicate that induced minor mutations in application to soya permit in a relatively short time production of forms with increased content and better quality protein. Tables 4; References 30: 20 Russian, 10 Western.

1/1

USSR

UDC 581.132

STEPANOVA, A. M., and SHUMILOVA, A. A.

INHIBITION OF PHOTOSYNTHESIS BY TRANS-ACONITIC ACID

Leningrad VESTNIK LENINGRADSKOGO UNIVERSITETA No 15, Part 3 Aug 76 signed to press 10 Apr 75 pp 118-120

(Text-English language abstract supplied by authors) Inhibitory effect of trans-aconitic acid ($5 \cdot 10^{-2}$ M) on respiration and photosynthesis has been studied on discs of *Nicotiana rustica* and *Zea mays* leaves. In *Nicotiana rustica* leaves the inhibition of respiration was 30-60% and that of photosynthesis 50-100%. In *Zea mays* leaves there was no inhibition of respiration but photosynthesis was inhibited by 20-30%. The mechanism of the inhibitory effect of transaconitic acid on photosynthesis is unknown. Tables 2; References 8; 6 Russian, 2 Western.

1/1

USSR

UDC 576.354.4:633.51

ARUTYUNOVA, L. G., and TIKHANOVSKAYA, G. A., Scientific Research Institute of Cotton Selection and Seed Growing imeni G. S. Zaytseva, Tashkent

MEIOTIC BEHAVIOR OF CHROMOSOMES IN POLYGENOME HYBRIDS OF COTTON (GOSSYPIMUM L.)

Moscow GENETIKA in Russian Vol 12 No 10 1976 signed to press 31 Oct 75 pp 15-22

(Text-English language abstract supplied by authors) Meiosis was studied in cotton hybrids derived from crosses in the following combination: tetraploidXdiploid; tetraploid X hexaploid; hexaploid X diploid; and hexaploid X hexaploid. In the meiosis M_1 the following facts were established: the chromosomes present in the F_1 hybrid (*G. hirsutum*X*G. herbaceum*X*G. harknessii*) X*G. harknessii* there are: 13₁ out of the large chromosomes of the genome A of *G. herbaceum* and 13₁₁ out of the small chromosomes of the genome D_{1-2} of *G. harknessii* and of the subgenome D of the amphidiploid; in the F_1 hybrid (*hirsutum*X*herbaceum*X*harknessii*)X*G. herbaceum* the following chromosomes were identified: 13₁ out of small chromosomes of the subgenome D of the amphidiploid and 13₁₁ out of large chromosomes of the genome A of *G. herbaceum* and of the subgenome A of the amphidiploid; in 1/2

USSR

ARMYUNOVA, L. G., and TIKHANOVSKAYA, G. A., GENETIKA Vol 12 No 10 1976
pp 15-22

the F_1 hybrid (hirsutumXstockii)XG. harknessii the following chromosomes were present: up to 26₁ large chromosomes of the genome E of G. stocksii and of the subgenome A of the amphidiploid and up to 13₁₁ out of small chromosomes of the genome D2-2 of G. harknessii and of the subgenome D of the amphidiploid. In the pentaploid and hexaploid and hexaploid F_1 hybrids (hirsutumXherbaceumXharknessii)X(hirsutumXstocksii) and the F_1 hybrid (hirsutumXsturtii)X(hirsutumXanomalum) there were paired chromosome of the genomes AD, while the chromosomes of the remotely related diploid genomes C₁ of G. sturtii, E₁ of G. stocksii and B₁ of G. anomalum remain as univalents. The pairing of chromosomes at metaphase in meiosis of polygenome cotton hybrids is the method of studying the degree of affinity of different Gossypium species. Figure 1; Table 1; References 18: 4 Russian, 14 Western.

2/2

USSR

UDC 575.12:633.11

TSIL'KE, R. A., and TSIL'KE, I. A., Siberian Scientific Research Institute
of Agriculture, Omsk

MONOSOMIC ANALYSIS OF THE SPIKE LENGTH IN COMMON SPRING WHEAT

Moscow GENETIKA in Russian Vol 12 No 10 1976 signed to press 23 Jan 76
pp 5-9

(Text-English language abstract supplied by authors) Under field conditions of 1971-1972, 21 hybrid combinations were studied in F_1 and F_2 derived from the crosses of a monosomic series of the cultivar Chinese Spring (CS) with the Siberian cultivar Milturum 553 (M 553) in comparison with disomic hybrids F_1 and F_2 CSXM 553 and with parental cultivars CS and M 553. In 1971 in F_2 the effect of monosomy was revealed for 11 chromosomes and in 1972 in F_1 -for 14, and in F_2 -for 11 chromosomes. In three cases (5A in 1971 and 1D, 6D in 1972) the effect of monosomy produced the longer and in all remaining cases-the shorter spikes. The simple deviation of monosomic hybrids from disomic ones over years and generations towards the shorter spike was revealed in all chromosomes of the third (3A, 3B, 3D), in two chromosomes of the fourth (4B, 4D) and in two chromosomes of the fifth (5B, 5D) homologous groups. The effect of chromosomes 5A and 6D, in addition to the earlier known, in which the genes controlling the spike length are probably located, is established. Table 1; References 30: 12 Russian, 17 Western.

1/1

USSR

UDC 633.15

MUSIYKO, A. S., corresponding member of VASKhNIL (All-Union Academy of Agriculture Sciences imeni Lenin), and SOKOLOV, V. M., and TROFIMOV, V. A., candidates of agricultural sciences, All-Union Order of Lenin and Order of Labor's Red Banner Selection Genetic Institute

IMPROVEMENT IN CONSISTENCY OF GRAIN ENDOSPERM OF CORN WITH HIGH CONTENT OF LYSINE

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 10 Oct 76 pp 28-34

(Text-English language abstract supplied by authors) The results of improving the consistency of endosperm in corn of high lysine content are given. In three lines and one species double recessives O_2 fl have been obtained, two of which with intermediate (mosaic) consistency. Their protein quality was found to be considerably better as compared to usual corn but protein lysine level was not higher than that of O_2 . In the course of experiments the methods of double mutant identification have been detailed. The protein aminoacid content in the grain of double mutants O_2 ae and fl₂ae is given. The mutant lysine level was found to be higher as compared to that of O_2 .
1/2

USSR

MUSIYKO, A. S., and SOKOLOV, V. M., AND TROFIMOV, V. A., VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI No 10 Oct 76 pp 28-34

The possibility of obtaining constant forms with the endosperm of intermediate consistency as a result of choice is shown. A new source of gene O_2 was revealed, its lysine content was found to be somewhat decreased as compared to that of O_2 Synth. A, but its protein content was found to be higher as compared to that of the latter and some of its agronomical characteristics were found to be better. Tables 4; References 10: 4 Russian, 6 Western.

2/2

USSR

UDC 636.085(252)+551.49

ZYKOV, YU. D., corresponding member of VASKhNIL (All-Union Academy of Agricultural Sciences imeni Lenin), Kazakh Institute of Agriculture

UNDERGROUND WATER, A MAJOR RESERVE OF FEED PRODUCTION

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 10 Oct 76 pp 35-39

(Abstract) Kazakhstan was charged in 1974 with responsibility to increase its sheep livestock to 50 million. Realization of this task appeared possible with the recent discovery of large underground water reserves. The republic has underground reserves of about 1300 m³/s; 17 artesian basins in the south and southeast can, in the course of more than 100 years, yield about 500 m³/s fresh and slightly salted waters which will permit irrigation of 1.2 million hectares of desert. The Section of Oasis Feed Production of the Kazakh Institute of the Mendon Pasteuring Industry has successfully grown alfalfa and Sudan grass in Aktyubinsk Oblast, utilizing its available water, and, also, appropriate technology. An extensive
1/2

USSR

ZYKOV, YU. D., VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI No 10 Oct 76 pp 35-39

program of water reserve exploitation has been carried on at 8 kolkhoses of Uygur Rayon, Alma-Ata Oblast which has self-replenishing wells: items grown were alfalfa, barley, melons, corn, and wooded zones. The Ministries of Agriculture and of Reclamation and Water Economy (Kazakh SSR) have charged the cited oblasts and also Gur'yev, Dzhambul, Kzyl-Orda, Mangyshlak, Pavlodar, Semipalatinsk, Taldy-Kurgan, and Chimkent Oblasts to establish appropriate programs which exploit their underground water for fodder production. Tables 3; References 5 (Russian).

2/2

USSR

LAVROV, A. P., and ORLOVSKIY, N. S., Order of Labor's Red Banner Institute of the Deserts, Academy of Sciences Turkmen SSR

SOIL AND CLIMATIC REGIONALIZATION OF THE TURKMENISTAN PLAIN

Ashkhabad PROBLEMY OSVOYENIYA PUSTYN' Nos 3-4 1976 signed to press 11 Mar 76 pp 106-111

(Text-English language abstract supplied by authors) Natural conditions are one of the major factors determining the management problems of agricultural farming. The problem of planning and improvement of agricultural efficiency places extreme stress on thoughtful study and proper approach towards natural resources and soil and climatic conditions. Above 80% of the republic's territory are plains with specific soil and climatic conditions. Distinguished are the following taxonomic units of regionalization: province, region, and district. The district is distinguished on the basis of a complex of related natural factors: soil, relief forms, lithology, ground waters etc. The whole territory of the republic was

1/2

USSR

LAVROV, A. P., and ORLOVSKI, N. S., PROBLEMY OSVOYENIYA PUSTYN' Nos 3-4 1976 pp 106-111

referred to the Touran desert province which, in turn, includes 12 soil-climatic regions. They are subdivided into 58 districts, each characterised by a comparatively similar soils in view of their origin and agronomic indices. The latter presupposes elaboration of effective reclamation measures of the soils. Also vast tracts of takyr-like and light serozem soils have been recorded to be first reclaimed in zone of the Karakum Canal and bottomlands of the Amudar'ya river. Figure 1; Table 1; References 18 (Russian).

2/2

USSR

SULTANOV, F. F., Institute of Physiology and Experimental Pathology of the Arid Zone, Academy of Sciences, Tadzhik SSSR

MECHANISMS OF MAN AND ANIMAL ADAPTATION TO CONDITIONS OF THE ARID ZONE

Ashkhabad PROBLEMY OSVOYENIYA PUSTYN' Nos 3-4 1976 signed to press 1 Dec 75 pp 66-75

(Text-English language abstract supplied by author) Reclamation of arid lands possessing peculiar natural and climatic features immensely increases the importance of the researches in physiological adaptation mechanisms of man and animals aimed at searching for methods that must be such as to benefit the life and work of people under the conditions of arid zone. In the process of adaptation to high environmental temperatures, of great importance are the first reactions of the body exposed to new environmental conditions. This is because these reactions in the process of determining the intensity of high temperature effect on the body may become uncontrolled producing malfunctioning of certain systems. The latter makes difficult, or even excludes, adaptation to high environmental temperatures. Bearing in mind that adaptation to heat is a temporal process, investigations have been initiated of the primary effects of arid zone factors on
1/2

USSR

SULTANOV, F. F., PROBLEMY OSVOYENIYA PUSTYN' Nos 3-4 1976 pp 66-75

non-adapted bodies. To sum up briefly the characteristics of the processes occurring in a non-adapted body exposed to high ambient temperature it is necessary to single out the imperfect nature of controlling mechanisms of heat distribution in the body, overload of cardiovascular system at a relative circulatory incompetence and inadequacy of hormonal-humoral stress reaction. The basis of adaptation to arid zone conditions (to high temperature in particular) is in the improvement of regulatory mechanisms eliminating side-effects of unspecific reactions. In due course of adaptation redistribution of functional activity of different systems occurs decreasing the load on hemodynamics and adapting the tissue metabolism to new environmental conditions. The schemes and concepts elaborated make it possible to come close to the solution of the problem of man's adaptation to arid zone climatic conditions aimed at searching for methods which would benefit the activities and life of people. Figures 2; References 15: 9 Russian, 6 Western.

2/2

USSR

UDC 631.522.46:(633.14+633.353

MOLCHAN, I. M., ANDRIYASH, V. P., and LAVRUSHKINA, G. S., Selection-Genetic Station in "Mikhaylovskiy"

POLYMORPHISM ACCORDING TO DEGREE OF AUTO-INCOMPATIBILITY AND MUTABILITY WITH INBREEDING IN RYE AND BEANS

Moscow IZVESTIYA TIMIRYAEVSKOY SEL'SKOKHOZYAYSTVENNOY AKADEMII No 5
Sep/Oct 76 signed to press 19 Apr 76 pp 51-56

(Text-English language abstract supplied by authors) The investigation of rye and beans has shown considerable interspecific and intrapopulation polymorphism in the degree of self-incompatibility and frequency of chromosome aberrations in the mitotic cells of the root-lets from inbred seeds. The stronger the self-incompatibility of the self-pollinated form is, the greater the mutability and elimination of inbred organism increase in the period of seed germination and hematogenesis. Within the self-incompatible population of rye, self-compatible Sf-forms may appear and be selected mutationally in the process of inbreeding. Self-compatible Sf-forms are found in low self-compatible parents giving increased mutability in the

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USSR

MOLCHAN, I. M., ANDRIYASH, V. P., and LAVRUSHKINA, G. S., IZVESTIYA TIMIRYAEVSKOY SEL'SKOKHOZYAYSTVENNOY AKADEMII No 5 Sep/Oct 76 pp 51-56

inbred progeny in a greater number than in high self-compatible ones. The form producing role of inbreeding in self-incompatible species is discussed on the basis of the results obtained from the investigations and literature data. Figure 1; Tables 5; References 21: 11 Russian, 10 Western.

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USSR

UDC 631.53.025:633.14"324"

KARPOV, B. A., Department of Storage and Technology of Agricultural Products.

INFLUENCE OF HARVESTING PERIODS ON LONGEVITY OF WINTER RYE SEEDS

Moscow IZVESTIYA TIMIRYAZEVSКОЙ SEL'SKOKHOZYAYSTVENNOY AKADEMII No 5
Sep/Oct 76 signed to press 23 Jan 76 pp 45-50

(Text-English language abstract supplied by author) The paper deals with investigation of the winter rye seeds that have been stored for 6 years. The seed was harvested at different stages of grain ripeness from milky to complete. The investigation has shown that with superearly harvesting when grain filling is stopped and when the possibility of obtaining maximum yields is limited the seed has a high germinating power but its longevity is not high. Cutting the crop at the phase of gold ripeness under favorable conditions for ripening results in seed of high germinating power, maximum longevity and greatest mass of 1000 kernels. The longevity of seed of complete ripeness is largely dependent on the weather conditions. Under favorable conditions of ripening such seed does not yield to the best 1/2

USSR

KARPOV, B. A., IZVESTIYA TIMIRYAZEVSКОЙ SEL'SKOKHOZYAYSTVENNOY AKADEMII
No 5 Sep/Oct 76 pp 45-50

grain samples. The quality and longevity of the seed, especially if it is overmatured, decrease when the latter is wet from rain. The economic longevity of best winter rye seed of combine threshing varied from 3 to 5 or 6 years depending on the weather conditions of growing.
Tables 2; References 6: 5 Russian, 1 Western.

USSR

UDC 631.516:633.15

DOSPEKHOV, B. A., PUPONIN, A. I., and KARASEV, N. G., Department of Agriculture and of Experimental Methodology

MINIMALIZATION OF WORKING SODDY-PODZOL SOIL IN CULTIVATION OF CORN

Moscow IZVESTIYA TIMIRYAZEVSКОЙ SEL'SKOKHOZYAYSTVENNOY AKADEMII No 5
Sep /Oct 76 signed to press 22 Mar 76 pp 30-37

(Text-English language abstract supplied by authors) The paper deals with the results of a three-year investigation on minimalization of tilling soddy-podzolic medium loamy soil that is used for growing corn for silage in the central part of the Nonchernozem zone. The most promising system of soil tillage agrotechnically and economically is the system including once-in-a-year fall plowing of soddy-podzolic light loamy soil, presowing strip cutting and sowing seeds into strips. This system is used in growing corn with application of herbicides. During the growing period it is desirable to loosen the soil between rows only once, when herbicides are used. Tables 8; References 12: 10 Russian, 2 Western.

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USSR

UDC 581.134:547.965:633.11

PLESHKOV, B. P., NOVIKOV, N. N., and GRUZDEV, L. G., Department of Agro-nomic and Biological Chemistry

AMINOACID COMPOSITION OF READILY SOLUBLE WHEAT GRAIN PROTEINS IN RELATION TO QUALITY SELECTION

Moscow IZVESTIYA TIMIRYAZEVSКОЙ SEL'SKOKHOZYAYSTVENNOY AKADEMII No 5
Sep/Oct 76 signed to press 10 Nov 75 pp 214-216

(Text-English language abstract supplied by authors) The paper deals with the study of amino acid composition of separate fractions of readily soluble wheat grain proteins of "Mironovskaya 808" variety and wheat and couch grass amphidiploid PPPG 79 (2n=56). The fractions were obtained on sefadex G-100 by gel-chromatography. All of them differ markedly in the content of amino acids. Protein fractions containing increased amount of essential amino acids, lysine and threonine, in particular, have been determined. Protein fractions with minimum and maximum content of amino acids differ in component composition of proteins. Figures 2; Table 1; References 8: 5 Russian, 3 Western.

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USSR

UDC 581.132

KORZH, B. V., All-Union Scientific-Research Institute of Plant Growing imeni N. I. Vavilov, and All-Union Academy of Agricultural Sciences imeni Lenin, Leningrad

NEW DATA ON THE PHOTOSYNTHESIS AND RESPIRATION OF GREEN PLANTS UNDER PULSED ILLUMINATION

Moscow DOKLADY AKADEMII NAUK SSSR in Russian 1976 Vol 227 No 4 signed to press 24 Sep 75 pp 1014-1017

[Abstract] The superior quality of gas exchange in green plants when subjected to pulsed illumination has been known and studied since 1905; however, the immobility of experimental apparatus used up to now prevented direct measurement of the photosynthesis and respiration rates under conditions of pulsed radiation, and an unambiguous interpretation of data was not possible. The present experimental study produced principles for a new, noninertial method for measuring gas exchange in the presence of pulsed illumination, and also some pertinent experimental data. Tests were run on VIR-44 corn sprouts and Potomac kidney bean plants, using the "Irga" gas analyzer in a

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USSR

KORZH, B. V., DOKLADY AKADEMII NAUK SSSR Vol 227 No 4 pp 1014-1017

closed gas system with natural concentrations of CO₂ and O₂; the system included an "anteroom" with controlled temperature and intensity of illumination. Illumination periods were strictly controlled. Experimental results (shown graphically) demonstrate the definite stimulative effects of pulsed radiation on photosynthesis and plant respiration. Figures 2; references 15: 6 Russian, 9 Western.

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USSR

UDC 633.15 631.524.7

LEYN, Z. Y., and OVCHARENKO, M. M., Central Laboratory, State Commission for Variety Testing of Agricultural Crops, Moscow

VARIABILITY OF THE CHEMICAL COMPOSITION OF GRAIN OF CORN HYBRIDS UNDER THE EFFECT OF ENVIRONMENTAL CONDITIONS

Moscow SEL'SKOKHOZYAYSTVENNAYA BIOLOGIYA in Russian Vol 11 No 4, Jul/Aug 76
signed to press 28 Aug 75 pp 550-555

[Abstract] In recent years new highly productive corn hybrids have been created, and previous hybrids well-adapted for growing in local soil and climatic conditions have been improved. In that connection the characteristics of the chemical composition of such hybrids, with consideration of the variability of that composition under the influence of weather conditions at the soil-climatic point where the hybrid was regionalized, are of great interest. Therefore an analysis was made of grain from state variety trial plots in different soil-climatic zones to determine the contents of crude protein, lysine, zein, starch and crude fat. Correlations were calculated

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USSR

LEYN, Z. Y., and OVCHARENKO, M. M., SEL'SKOKHOZYAYSTVENNAYA BIOLOGIYA Vol 11 No 4, Jul/Aug 76 pp 550-555

between the yield and crude protein and other indices of corn grain quality and a positive correlation was obtained between some values. Tables 2; references 16 Russian.

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USSR

UDC 633.491 631.524.86

PIKA, N. A., and GLADYSHKO, S. A., Ukrainian Scientific Research Institute of the Potato, Nemeshayevo, Kiev Oblast

USE OF WILD PHYTOPHTORA-RESISTANT SPECIES OF POTATO IN INTERSPECIFIC HYBRIDIZATION

Moscow SEL'SKOKHOZYAYSTVENNAYA BIOLOGIYA in Russian Vol 11 No 4, Jul/Aug 76 signed to press 2 Apr 75 pp 490-496

[Abstract] The use of the wild species of potato *Solanum bulbocastanum* Dun., *S. cardiophyllum* Linol. and *S. pinnatisectum* Dun. in hybridization work to create starting materials resistant to *Phytophthora* and other diseases is made difficult by their inability to cross with varieties of *S. tuberosum*. A survey is presented of methods of overcoming that inability: the method of polyploidy, the method of polyploidy, the method of the intermediary, and, also, such methods as the formation of pistils and the provision of pollen tubes with a saccharose-agar nutrient medium, the use of a pollen mixture and the creation of suitable external conditions (temperature, moisture,

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PIKA, N. A., and GLADYSHKO, S. A., SEL'SKOKHOZYAYSTVENNAYA BIOLOGIYA Vol 11 No 4, Jul/Aug 76 pp 490-496

length, etc). Preliminary results of investigations of many scientists on interspecific hybridization are presented. Table 1; references 38: 4 Russian, 34 Western.

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USSR

UDC 577.3

SHUVALOV, V. A., KLIMOV, V. V., KRAKHALEVA, I. N., MOSKALENKO, A. A., and KRASNOVSKIY, A. A., corresponding member of the Academy of Sciences USSR; Institute of Photosynthesis, Academy of Sciences USSR, Pushchino, Moskovskaya Oblast, and Institute of Biochemistry imeni A. N. Bakh, Academy of Sciences USSR, Moscow

PHOTOTRANSFORMATIONS OF BACTERIOPHEOPHYTIN IN THE REACTION CENTERS OF RHODOSPIRILLUM RUBRUM AND CHROMATIUM MINUTISSIMUM

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 227 No 4, 1976 signed to press 12 Dec 75 pp 984-987

[Abstract] Research of the primary photoprocesses in the reaction centers is necessary for an understanding of the mechanism of conversion of a light quantum during photosynthesis. In these processes a special role is played by pigments of chlorophyllic nature capable of oxidation-reduction transformation. The present study was aimed at determining the effect of the charges of the primary electron donor and acceptor on the spectrum of bacteriopheophytin, as an indicator of localization of pigments in the reaction center; also at assessing the possibility of photoreduction of bacteriopheophytin contained in centers with low reduction-oxidation potentials of the $1/2$

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SHUVALOV, V. A., et al, DOKLADY AKADEMII NAUK SSSR Vol 227 No 4, 1976 pp 984-987

medium. It is concluded that if displacement of the absorption bands of pigments during change in the state of the centers actually is tied in with the effect of local fields of electron donor and acceptor on nearby pigments, then measurement of the shift of absorption bands of the pigments may be a means of studying the localization of pigments with respect to the primary donor and acceptor. It may be concluded that transfer of the electron from the excited bacteriochlorophyll to the ubiquinone can take place with participation of bacteriopheophytin. Figures 3; references 15: 6 Russian, 9 Western.

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USSR

633.11

MITROFANOVA, O. P., All-Union Scientific-Research Institute of Plant Breeding, Leningrad

GENETIC CONTROL OF GLIADIN IN WHEAT OF THE 'CHINESE SPRING' VARIETY OF T. Aestivum (L.)

Kiev TSITOLOGIYA I GENETIKA in Russian No 3, 1976 signed to press 17 Oct 75 pp 244-247

[Abstract] Gliadin, an auxiliary source of alcohol-soluble protein in the endosperm of wheat, consists of four fractions, α , β , γ and ω , each of which consists of several components. It is established that the species, biotype and variety of wheat can be differentiated on the basis of the componental makeup of the gliadin fractions, and that these differences are genotypal. This has made it possible to develop a method for the identification of wheat varieties, based on the electrophoretic spectrum of gliadin. The present study shows that the endosperm gliadin of T. Aestivum (L.) is controlled by at least six genes, which are localized in the 1AS, 1BS, 1DS, 6A β , 6BS and 6D α arms of the chromosome; also, that homologous genes do not exert analogous effects on the gliadin. Figures 3; table 1; references 13: 3 Russian, 10 Western.

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USSR

SHIGIN, I., Director, Central Chernozem Region Institute of the All-Union State Institute for the Planning of Industrial Buildings and Structures for Agriculture, and PEREL'MAN, V., Chief of the Mechanical-Technological Department of the Institute

A PLANT FOR THE PRODUCTION OF AMIDO-CONCENTRATED SUPPLEMENTS

Moscow SEL'SKOYE STROITEL'STVO in Russian No 10[324] Oct 76 p 7

[Abstract] A factory which produces a protein dietary supplement for cattle is described. The plant uses six extruders and two serial output mixed feed aggregates to treat a mixture of 70-75% grain, 20-25% urea and 5% sodium bentonite at 145-150° and 12-15 atmospheres, and produces 15 tons per shift. The entire process includes grain intake and purification, premixing of urea, bentonite and microadditions, dosing and component mixing, grinding and extrusion, cooling, grinding to a particle size of 4-6 mm, storage and distribution. Loading, unloading and intraplant transport are mechanized, while filling and emptying of hoppers, grinders and extruders are automated.

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SHIGIN, I., and PEREL'MAN, V., SEL'SKOYE STROITEL'STVO No 10[324] Oct 76 p 7

Extensive safety measures are planned. The low cost and high productivity of the plant makes it ideal for construction at large cattle farms.

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USSR

UDC 725.42:636

SAZONOV, YE., Chief Mechanical Specialist, Ural All-Union State Institute for the Planning of Industrial Buildings and Structures for Agriculture

AN "AIST" FEED PREPARATION COMPLEX

Moscow SEL'SKOYE STROITEL'STVO in Russian No 10[324] Oct 76 p 8

[Abstract] An "AIST" a factory complex which kiln-dries grass for the production of granulated, briquette and combined feeds, is described. The nine-structure complex treats a starting material of grass or other coarse-stemmed plants in a rotating drum drier prior to preparation of final feeds. Kiln drying, unlike natural drying, is independent of weather, increases nutrient concentration in the feed, and permits the use of various plants, including reeds and underbrush. (The term AIST is derived from the initials of the four Russian words which mean "aggregate--plant unit--for artificial drying of grass".) Figures 2.

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USSR

UDC 581.577.049.(477)

VLASYUK, P. A., academician, Academy of Sciences UkrSSR, and of the All-Union Academy of Agricultural Sciences

USE OF TRACE ELEMENTS IN AGRICULTURE

Kiev VISNYK AKADEMIY NAUK UKRAYNOSKOY RSR No 10, Oct 76 pp 73-77

[Abstract] Manganese, boron, zinc, molybdenum and lithium participate in metabolism of plants and increase yield of many varieties of plants. Manganese takes part in the structural conformation of DNA, plastome and genome, in the synthesis of polyanion molecules of chromatin and is found in nucleotides of peas. Zinc is of importance for the enzyme system that transforms indole compounds in corn. Molybdenum regulates ribosomal systems and participates in the activity of enzymes during nucleic and protein metabolism in legumes. Boron takes part in the synthesis of vitamins and in nucleic metabolism in vegetables and sugar beets. Lithium takes part in the activity of enzymes, influences energy processes, participates in the synthesis of proteins and starch in potatoes and other plants. The importance of metals and nonmetals lies in the fact that they are not interchangeable for plant organisms and they influence in their own way the conformation processes of biopolymers.
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VLASYUK, P. A., VISNYK AKADEMIY NAUK UKRAYNOSKOY RSR No 10, Oct 76 pp 73-77

Use of trace elements in the form of compounds, including superphosphate, nitroammophos and carboammophos combined with trace elements can be recommended for grey podzolized, soddy podzolic soil, podzolized leached and regraded chernozem, as well as for podzolized and carbonate soils. A rational use of these trace elements in combination with regular fertilizers increases yield and quality of winter wheat, buckwheat, corn and sugar beets. Table 1; references 8: all Russian.

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USSR

UDC 576.8:636.085.52

TOPCHIIY, M. P.

ANTIBIOTIC ACTIVITY OF POTATOES ENSILAGED WITH THE USE OF BACILLUS SUBTILIS-MESENTERICUS

Kiev MIKROBIOLOGICHNYY ZHURNAL in Ukrainian Vol 38 No 5, 1976 p 643

[Abstract] Ensiling cooked potatoes for domestic animal fodder with the use of *B. subtilis-mesentericus* results in a silage with good taste qualities and with high concentration of monosugars and dextrin. Furthermore, antibiotic substances are formed in it which stop the growth of *Sarcina flava*, *Staphylococcus aureus* and *Escherichia coli*. When 2 g of ensilaged potato was placed into a Petri dish containing one of the above bacteria, a circle 10-15 mm in diam. formed around the potato in which bacteria did not grow. This ability to suppress the growth of bacteria lasted for 10 days. When the silage was treated with 2% of lactic or acetic acids in order to eliminate the bacterostatic effect of organic acids, the ability of potato to inhibit the growth of bacteria was lower. When the silage was treated with acetic

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USSR

TOPCHIIY, M. P., MIKROBIOLOGICHNYY ZHURNAL Vol 38 No 5, 1976 p 643

acid, the bacteria-inhibiting circle was only 10 mm in diam and its activity lasted for only 36-48 hr. In the case of lactic acid treatment, the circle was only 5 mm in diam for *Sarcina flava* and 3 mm for *Staphylococcus aureus*, and *E. coli* was not inhibited at all.

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USSR

UDC 576.8:636.086.15

SIVERS, V. S. and BOGDAN, S. D.

IMPROVING NUTRITIONAL VALUE OF CORNCOBS

Kiev MIKROBIOLOGICHNYY ZHURNAL in Ukrainian Vol 38 No 5, 1976 pp 634-635

[Abstract] A partial hydrolysis of crushed corncobs by weak solutions of HCl or H₂SO₄ converts some of their hemicellulose into simple sugars which can be further transformed into proteins and organic acids that can be easily digested by cattle. Hydrolyzed corncobs that were subjected to bacteria for seven days contained 239.5-247.5 mg sugars/ml of extract, 1.717-1.824% of organic acids (mostly acetic and lactic), 7.3-8.17% protein, 26.4-27.6% hemicellulose, 21.25-22.5% lignin, 9.5-10.0% cellulose and 69.4-70.3% moisture. The treated corncobs can be digested by 50.8-51.2% (control 47.2). Addition of microorganisms to hydrolyzed corncobs is of prime importance because it transforms simple sugars into protein and other nutrients. The hydrolyzed corncob mass must be neutralized first before bacteria are added to it. The final pH of the treated corncobs was 4.20-4.45 (control 5.00). Table 1.

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USSR

UDC 576.8:636.086.6

SIVERS, V. S. and SPRAVITSEV, M. Kh.

MICROBIOLOGICAL TREATMENT OF STRAW BY CELLULOSE-AND LIGNIN-DECOMPOSING BACTERIA

Kiev MIKROBIOLOGICHNYY ZHURNAL in Ukrainian Vol 38 No 5, 1976 p 633

[Abstract] Nutritional values of the winter wheat straw can be increased by bacteria belonging to genres of Sorangium, Cytophage, Cellvibrio and Pseudomonas in combination with butyric acid bacteria. The amount of lignin decomposed by these bacteria was 7-12% in 3.5-6 months. Among organic acids, the straw contained primarily acetic(58.2-65.9%), lactic(16.4-37.4%) and butyric acid (18.2-25.4%). Calves fed with a partially decomposed straw increased their weight by 612-750 g/day (control 454-530 g/day) and they consumed 92.8-96.4% of available straw rations (8 kg/day), as compared with only 69-83% for control calves.

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USSR

UDC 534.88:599.423

KONSTANTINOV, A. I., MAKAROV, A. K., SOKOLOV, B. V., and SANOTSKAYA, N. N.,
Physiological Scientific Research Institute imeni A. A. Ukhtomskiy, Lenin-
grad University

PHYSIOLOGICAL MECHANISMS OF USE OF DOPPLER EFFECT IN ECHOLOCATION BY
RHINOLOPHUS FERRUMEQUINUM BATS

Leningrad ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII in Russian Vol 12
No 5 Sep/Oct 76 signed to press 30 Dec 74 pp 466-472

(Text-English language abstract supplied by authors) During flight, the greater horse-shoe bat *R. ferrumequinum* decreases the frequency in the medial part of the emitted signal in proportion to the relative target-bat velocity. The value of the decrease is approximately equal to the Doppler shift; as a result, the animal picks up the echo at its species specific frequency irrespective of the flight velocity. Threshold curve of bat's auditory system plotted in terms of N_4 , exhibits a sharp tuning peak with a slope of about 83 dB/kHz towards low frequencies. The species specific frequency lies between the frequencies corresponding to the highest and the lowest thresholds.

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USSR

KONSTANTINOV, A. I., MAKAROV, A. K., SOKOLOV, B. V., and SANOTSKAYA, N. N.,
ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII Vol 12 No 5 Sep/Oct 76 pp 466-
472

The described peculiarities of emission and perception of signals permits considering the orientation system in the bat as a Doppler compensating system which provides effective detection and discrimination of moving targets (e.g., a prey), improves spatial characteristics of hearing and enables the animal to evaluate velocity during approaching the target. Figures 4; References 13: 5 Russian, 8 Western.

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USSR

UDC 812.014.55

GOL'DBURT, S. N., and OGINETS, L. V.

PROLONGATION OF RESIDUAL AUDITORY SENSATION UNDER THE INFLUENCE OF NOVOCAIN

Leningrad VESTNIK LENINGRADSKOGO UNIVERSITETA No 15, Part 3 Aug 76 signed to press 5 Nov 74 pp 71-78

(Text-English language abstract supplied by authors) It has previously been demonstrated that the difference between the values of the reaction time to the end (RT_e) and to the beginning (RT_b) of a short sound stimulus is a direct measure of the duration of the residual auditory sensation (DRAS): $DRAS = RT - RT_b$. In quiet, DRAS decreases from 150 to 0-30 msec when the sound duration increases from 10 to 300 msec. In the presence of white noise and when the hearing is impaired by old age, DRAS undergoes a definite increase (+ 100 - 200 msec), but under the action of the novocain DRAS increases still more markedly (+ 300 - 500 msec). The increase in DRAS under all conditions (in the presence of white noise, in the presbycusis and under the novocain) concerns not only the shortest duration of the sound (300 msec), but also that of 500-1000-2000 msec. Figures 3; References 20: 15 Russian, 5 Western.

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USSR

UDC 612.85:534.76:599.423

GURLINSKIY, I. I.

FEATURES OF ULTRASOUND LOCALIZATION BY GREAT HORSESHOE BATS IN THE VERTICAL PLANE

Leningrad VESTNIK LENINGRADSKOGO UNIVERSITETA No 15, Part 3 Aug 76 signed to press 17 Dec 74 pp 79-87

(Text-English language abstract supplied by author) In behavior experiments it is shown that great horseshoe bats localize with high accuracy, in a vertical plane, the signals which corresponding to tonal parts of their long or frequently repeated orientation impulses and roughly locate the position of the source of short FM-stimuli. Disturbance of binaural reception, demobilization or bilateral removal of pinnae completely prevent these animals from discriminating the direction of tonal signals' arrival. It is supposed that vertical localization of the reflected impulses in the given species of bats is based on successive analysis of interaural intensity differences of echo constant-frequency parts. These differences are created by the movements of ear, synchronizing with the signals. Figures 4; References 15: 8 Russian, 7 Western.

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ANDREYEVA, N. G.

CHARACTERIZATION OF THE REACTION OF THE NEURONS OF THE INFERIOR EMINENCES OF THE LAMINA QUADRIGEMINA OF GREAT HORSESHOE BATS TO STIMULI PRESENTED AGAINST A BACKGROUND OF NOISE

Leningrad VESTNIK LENINGRADSKOGO UNIVERSITETA No 15, Part 3 Aug 76 signed to press 24 Dec 74 pp 148-149

(Text-English language abstract supplied by author) Single unit activity in the inferior colliculus of *Rhinolophus ferrum-equinum* was studied with pure-tone and down-sweeping frequency modulated signals (FM) delivered against white-noise background. The signal-to-noise ratio was found to depend to a considerable extent on signal intensity. All the isolated neurons with best frequencies ranging from 70 to 80 kc/s differentiated from noise FM-signals more efficiently than pure-tone pulses. Conversely, most of the neurons with response areas within 80-85 kc/s band were more efficient in differentiating pure-tone than FM-signals. Figure 1; References 5: 3 Russian, 2 Western.

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USSR

UDC 616.895.8-07:616.155.32-092-07

LIDEMAN, R. R., and BABAYAN, N. G., Laboratory of General Pathophysiology, Institute of Psychiatry, Academy of Medical Sciences USSR, Moscow

HUMORAL FACTORS OF THE SERUM, THE CAUSE OF AN ALTERED PHYSIOLOGICAL CONDITION OF PERIPHERAL BLOOD LYMPHOCYTES IN SCHIZOPHRENIA PATIENTS

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian Vol 82 No 9 Sep 76 signed to press 25 Mar 76 pp 1047-1050

(Text-English language abstract supplied by authors) Statistically significant correlations were revealed between the following: the percentage content--in the lymphocyte cultures of patients suffering from schizophrenia--of cells responding to the stimulation with phytohemagglutinin (PHA) by DNA synthesis, and the percentage--in the white blood cell cultures of healthy donors--of lymphocytes failing to respond to the PHA stimulation by the DNA synthesis as a result of cultivation of these cells in a medium containing the blood serum (20%) of schizophrenic patients. Similar correlation was revealed between the percentage content--in the cultures of the white blood cells of schizophrenic patients--of adhesive lymphocytes--

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LIDEMAN, R. R., and BABAYAN, N. G., BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY Vol 82 No 9 Sep 76 pp 1047-1050

in the white blood cell cultures of healthy donors--in cultivation of these cells in a medium containing the blood serum (20%) of schizophrenic patients. The data obtained confirmed a supposition that the altered physiological condition of the peripheral blood lymphocytes of patients suffering from schizophrenia was caused by the factors contained in the blood serum of these patients. Figures 3; References 11: 9 Russian, 2 Western.

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USSR

UDC 612.015.3-06:612.017.1

MERKUR'YEVA, R. V., PROTSENKO, YE. I., BUSHINSKAYA, L. I., AULIKA, B. V., KULYGINA, A. A., and PROKOPENKO, YU. I., Laboratory of Biochemistry and Laboratory of Radiant Energy, Institute of General and Communal Hygiene imeni A. N. Sysin, Academy of Medical Sciences USSR, Moscow

A STUDY OF METABOLIC MECHANISMS INVOLVED IN THE ISOLATED AND JOINT ACTION OF A CHEMICAL ALLERGEN

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian Vol 82 No 10 Oct 76 signed to press 20 Feb 76 pp 1221-1223

(Text-English language abstract supplied by authors) Biochemical study of the activity of the enzyme systems of different localization in the cell connected with the subcellular structures--lysosomes (hyaluronidase, N-acetyl-beta-D-glucosaminidase, β -glucosidase) and hyaloplasm-soluble (aldolase of neuraminic acid), and, also, study of the state of the enzyme-substrate groups, belonging to the immunoreactive biopolymers containing a carbohydrate (glucoproteins, glycosaminoglycans) was carried out on the tissues of different organs (the liver, kidneys, small intestine, skin)
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USSR

MERKUR'YEVA, R. V., PROTSENKO, YE. I., BUSHINSKAYA, L. I., AULIKA, B. V., KULYGINA, A. A., and PROKOPENKO, YU. I., BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY Vol 82 No 10 Oct 76 pp 1221-1223

and on the blood serum of albino rats exposed to isolated and joint (in combination with various doses of ultraviolet irradiation) action of a chemical allergen (dinitrochlorbenzene). General and specific regularities of metabolic reactions, the appearance of which could presumably be connected with the development of delayed allergy, were revealed.

References 18: 10 Russian, 8 Western.

Biophysics

USSR

UDC 611-01-082.72

SRESELI, M. A., BOL'SHAKOV, O. P., IL'YINSKAYA, T. A., KAZAK, V. L., NAGIBINA, I. M., and RYZHOVA, L. I., Department of Operative Surgery, First Leningrad Medical Institute imeni Academician I. P. Pavlov, and Department of Spectral and Physical Optic Instruments, Leningrad Institute of Precision Mechanics and Optics

HOLOGRAPHY AND ITS POSSIBLE USE IN APPLIED ANATOMY

Leningrad ARKHIV ANATOMII GISTOLOGII I EMBRIOLOGII in Russian Vol 71 No 9 Sep 76 signed to press 9 Feb 76 pp 104-108

(Text-English language abstract supplied by authors) The article deals with some methods of holography (holograms with inclined reference beam, in three-dimensional media after Yu. N. Denisiuk, holographic interferometry) as applied to studying anatomical objects. Approximate optical schemes and photographic copies of holograms of separate objects are presented. The comparative analysis of different methods enabled the authors to recommend for practical use the method of obtaining holograms in three-dimensional media for documentation of anatomical investigation and storage of information, holographic method of obtaining contour maps of the surface for quantitative characteristics of individual properties of the object, and the method of double exposure for studying static and dynamic deformities. Figures 5; References 9: 4 Russian, 5 Western.
1/1

USSR

UDC 613.6:621.373.826

KASHUBA, V. A., and SEMENOV, A. M.

QUESTIONS ABOUT HYGIENE AND WORK SAFETY IN OPERATION OF LASERS

Moscow MASHINOSTROITEL' in Russian No 8 Aug 76 pp 34-35

(Abstract) Lasers have found very wide use in science and technology. The USSR now uses "Korund", "Kvant-9 and -10", "Iskra-8", "Svet-30", "Luch-IM", "Lund-100", "SLS-10-1", and other laser type instruments. Korund has tremendously accelerated output in a watch factory (jewel-drilling), freed hundreds of sq. meter space, and lowered personnel numbers by 470 workers (a photo is presented of an automated Korund-laser watch production section). Research by the F. F. Erisman Scientific Research Institute of Hygiene, in Moscow, demonstrated the positive effect of laser introduction in plants. The familiar hazards of use are noted, as are attending dangers from IR and UV, noise, and aerosols. Safety measures must include isolation of instruments shielding and protective goggles; hygienic, physiological, and ergonomic requirements of laser units must be met. Medical control of workers is said to be more intensive than in the USA. Figure 1; No references.
1/1

USSR

UDC 612.825.54.014.44

KAMYSHEVA, A. S., Laboratory of Biohistochemistry, Institute of the Brain, Academy of Medical Sciences USSR, Moscow

INFLUENCE OF LIGHT PULSE RESTORATION UPON ENERGY PROCESSES OF THE VISUAL SYSTEM OF THE BRAIN OF ANIMALS DEVELOPING UNDER CONDITIONS OF LIGHT DEPRIVATION

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian Vol 82 No 9 Sep 76 signed to press 16 Feb 76 pp 1066-1068

(Text-English language abstract supplied by author) The changes in the rate and the character of energy processes in the mitochondria of the visual system of the brain caused by prolonged dark-rearing of animals (for 2½ months from the time of birth) proved to be reversible. The extent of normalization differed in the case of mitochondria of the optic cortex and the superior colliculus. After the animals were placed under normal light conditions the rate of the mentioned processes (when glutamic acid was used as a substrate) increased in the course of a two-week restorative period, and reached the control level or even exceeded it.

1/2

USSR

KAMYSHEVA, A. S., BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY Vol 82 No 9 Sep 76 pp 1066-1068

The rate of the electron transport in the area of the cytochrome c-cytochromoxidase succinate oxidase oxidation chain decreased at the period of restoration and approached the control level. The role of specific impulsion in the age formation of the energy processes of the brain mitochondria is discussed. Figure 1; Table 1; References 8: 6 Russian, 2 Western.

2/2

USSR

UDC 617.72:617.721.6)-057.2-07:613.644

KATORGINA, O. A., professor, SEMENOVA, G. S., docent, ANDRIANOVA, YE. I., candidate of medical sciences, FIL'TS, M. A., BUZALO, A. F., and ZHERNOKOVA, S. A., Department of Eye Diseases, Lvov Medical Institute

VASCULAR CHANGES ON THE ANTERIOR SECTOR OF THE EYE IN WORKERS WHO ARE SUBJECTED TO THE ACTION OF LOCAL VIBRATION AND HIGH-FREQUENCY ELECTROMAGNETIC RADIATION

Odessa OFTAL'MOLOGICHESKIY ZHURNAL in Russian Vol 31 No 4 1976 signed to press 11 Feb 75 pp 273-277

(Text-English language abstract supplied by author) Biomicroscopic examination of the anterior segment of the eye in 673 workers (1346 eyes), (151 miners, 205 workers from glass plant and 317 workers manufacturing cinescopes) has revealed spasticoatonic changes in vessels of the conjunctiva and limbus, dystropic changes of the iris in 75% of cases. The incidence of the changes was found in workers manufacturing crystal and decorative glass, who undergo the action of local high-frequency vibration in 81%; in drivers from coal mines subjected to low-frequency vibration it reached 69.8%; in explosers--in 100%; in workers subjected to the action of electromagnetic radiation it reached 70--76.9%. In miners, most characteristic
1/2

USSR

KATORGINA, O. A., SEMENOVA, G. S., ANDRIANOVA, YE. I., FIL'TS, M. A., BUZALO, A. F., and ZHERNOKOVA, S. A., UFTAL'MOLOGICHESKIY ZHURNAL Vol 31 No 4 1976 pp 273-277

were spasms of conjunctival vessels and petechial hemorrhages in conjunctiva; in workers from glass plant--fascular spasm and dystrophic changes in the iris; and in workers manufacturing cinescopes--dystonic changes in the form of ampule-shaped widening of vessels, dilitation of veins, vascular stasis. As compared to control group, the changes were mostly found in young persons, the incidence significantly increasing with the increase of the length of work, which may indicate their occupational origin. Biomicroscopic studies are recommended for early detection of neuro-circulatory and dystrophic changes in workers subjected to the action of the studied factors of industrial environment. Figures 2; Table 1; References 26 (Russian)
2/2

USSR

UDC 576.8.095.14:582.282.23:535-31

FRAYKIN, G. YA., POSPELOV, M. YE., and RUBIN, L. B., Problem Laboratory of Cosmic Biology, Biology Faculty, Department of Wave Processes, Physics Faculty, Moscow State University

PHYTOCHROME SYSTEM OF CANDIDA GUILLERMONDII YEASTS AND ITS PARTICIPATION IN RECOVERY OF CELLS AFTER ULTRAVIOLET DAMAGE

Moscow VESTNIK MOSKOVSKOGO UNIVERSITETA, BIOLOGIYA, POCHVOVEDENIYA in Russian No 3 May/Jun 76 signed to press 20 May 75 pp 65-69

(Abstract) Red (660nm) light, R, activates the phytochrome system of *C. guilliermondii* yeast; however, growth of the yeast is stimulated for a period of only about 30 minutes after exposure to the R. The R effect is reversed if Far Red (730 nm) light, FR, is applied within the 30 minute period. R. protects yeast cells from the lethal action of UV-irradiation; application of R prior to UV decreases the UV effect (a photoprotective process), application after UV increases survival of the yeast (a photo-reactive process). FR reverses the stabilizing effect of R against UV, when the FR is applied in the 30 minute period. Further study is required for an understanding of the molecular mechanisms involved in the participation of the phytochrome system in the protective and reactivation processes of the yeast cells against UV.

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USSR

UDC 615.849.19:591.8

ZADOROZHNIY, B. A., SAFRONOV, B. G., and DYUBA, V. M., Department of Dermatology, Kharkov Medical Institute

MORPHOLOGICAL AND HISTOCHEMICAL CHANGES IN THE SKIN UNDER THE INFLUENCE OF LOW POWER GAS LASERS

Moscow VESTNIK DERMATOLOGII I VENEROLOGII in Russian No 8 Aug 76 signed to press 6 Feb 76 pp 34-39

(Text-English language abstract supplied by authors) In the skin of 97 guinea pigs, morphological and histochemical changes were found to develop under the influence of different doses of radiation of helium-neon and ultraviolet lasers. The doses were found, the effect of which may produce the most manifest stimulation of plastic, protein synthesis and metabolic processes in the skin, as well as doses causing initial dystrophic and necrobiotic changes in the epidermis and the derma. Figures 3; Tables 2; References 10 (Russian).

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USSR

UDC 616.288.7-092.9-02:615.849.19

VISHNEVSKIY, A. A. (junior), and SAVCHENKO, L. V., Institute of Surgery imeni A. V. Vishnevskiy, Academy of Medical Sciences USSR, and Department of Operative Surgery and Monographic Anatomy, Central Institute for the Advanced Training of Physicians, Moscow

EFFECT OF A CONTINUOUS CARBON DIOXIDE LASER ON RABBIT CONCHA AURICULAE TISSUE

Moscow EKSPERIMENTAL'NAYA KHIRURGIYA I ANESTEZIOLOGIYA in Russian No 5
Sep/Oct 76 pp 3-4

(Text- English-language abstract supplied by authors) Experiments have shown that a non-stop-acting carbon dioxide laser produces in the rabbit's auricle, depending on the depth of lesion, defects that take the shape of furrows or holes clearly delimited from the surrounding tissues. Auricle tissues have been destroyed: the epithelium, at the contact spot with laser, is absent, the dermis is coagulated, the cartilage plate shows signs of destruction and coagulation, and at all other areas there is evidence of vacuolization. The dermis shows a slight leucocyte reaction, many dilated vessels of the arterial and venous type. Figure 1; References 1 (Russian).

1/1

USSR

UDC 615.832.74+615.849.19+617-089

PLETNEV, S. D., and ABDURAZAKOV, M. SH., Group of Quantum Optics Generators, Moscow Scientific Research Oncology Institute imeni P. A. Gertsen, Moscow

COMPARATIVE CHARACTERIZATION OF EXPERIMENTAL OPERATIONS EMPLOYING A LASER BEAM, AN ELECTROKNIFE, AND A SURGICAL SCALPEL

Moscow EKSPERIMENTAL'NAYA KHIRURGIYA I ANESTEZIOLOGIYA in Russian No 5
Sep/Oct 76 pp 4-6

(Abstract) Soviet authors (Pletnev, et al. 1968, 1970, 1974; Khromov, et al., 1976, 1974; Ognev, et al., 1972; Polonskiy; and Vishnevskiy, Jr) have employed laser beams in operations. This technique has not found wide clinical use, however, and this article describes work to discern any advantages of lasers over the electroknife or scalpel. Walker sarcoma was removed experimentally from rats by laser beam (continuous action, wave length 10.6, mixed nitrogen, helium and carbon dioxide gases), or scalpel, or electroknife. The laser assured the best ablaticity and sterility of the operated wounds; during the laser operation the authors assert there was no danger of atomizing cellular elements into the surrounding area. Regeneration of the wounds from the laser beam took place more rapidly than with the electroknife or scalpel. Table 1; References 16: 12 Russian, 4 Western.

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USSR

UDC 612.822.3.014.46:576.851.555.097.29

TSELUKH, A. V., MAKULKIN, R. F., and KRYZHANOVSKIY, G. N., Department of Microbiology and of Pathological Physiology, Odessa Medical Institute imeni N. I. Pirigov, Laboratory of General Pathology of the Nervous System Institute of General Pathology and Pathological Physiology. Academy of Medical Sciences USSR, Moscow

CHANGES IN THE ELECTRICAL ACTIVITY OF THE CEREBRAL CORTEX IN INTOXICATION CAUSED BY CL. PERFRINGENS TOXIN, TYPE A

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian Vol 82 No 10 Oct 76 signed to press 21 May 76 pp 1192-1198

(Text-English language abstract supplied by authors) The electrical activity of the cerebral cortex was recorded in cats under mild nembutal anesthesia (15-20 mg/kg of body weight) during the development of Cl. perfringens, type A, toxin poisoning (the toxin was injected intramuscularly in a dose of 100 MLD per kg of body weight). Two phases of the changes in the electrical activity of the cerebral cortex were noted. The first phase was attended by the desynchronization of the electrical activity, persistence of the induced potentials and of the reaction of the rhythm reconstruction to the rhythmic light stimulus. No desynchronization occurred
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USSR

TSELUKH, A. V., MAKULKIN, R. F., and KRYZHANOVSKIY, G. N., BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY Vol 82 No 10 Oct 76 pp 1192-1198

under conditions of preliminary section of the midbrain (on the mesencephalic preparation), this indicating the involvement of the reticular formation into the pathological process and pointing to its role in the desynchronization effect. A profound depression of the electrical activity of the brain, depression of induced potentials and disturbance of the reaction of the rhythm reconstruction occurred during the second phase. Figures 3; Table 1; References 20: 13 Russian, 7 Western.

2/2

USSR

UDC 615.31:547.269.1).015.4:(615.477.24:616.12-085.844-78

UL'YANINSKIY, L. S., GRITSAK, A. V., and ZHDANOVA, N. F., Laboratory of Experimental Cardiology, Institute of Normal Physiology imeni P. K. Anokhin, Academy of Medical Sciences USSR, and Department of Pharmacology, of the Pharmaceutical Faculty of the First Moscow Medical Institute imeni I. M. Sechenov

THE EFFECT OF SULFHYDRYL GROUPS ON AUTOMATISM OF PACE MAKERS OF THE HEART

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian Vol 82 No 10 Oct 76 signed to press 13 Feb 76 pp 1165-1168

(Text-English language abstract supplied by authors) Experiments were performed on isolated rabbit hearts and also on the hearts with complete atrio-ventricular block; a study was made of the effect of an excess or deficiency of sulfhydryl groups on automatism of cardiac pace makers. Unithiol and cysteine in concentrations of $1 \cdot 10^{-6}$ - $1 \cdot 10^{-4}$ g/ml were used as donors of sulfhydryl groups; deficiency of these groups was induced by alloxan administration in concentrations of $1 \cdot 10^{-5}$ - $5 \cdot 10^{-5}$ g/ml. Changes in the sulfhydryl group content produced no marked effect on the automatism of the synoatrial node. An excess of sulfhydryl groups promoted poststimulation depression of the automatism of the potential pace makers of the cardiac

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USSR

UL'YANINSKIY, L. S., GRITSAK, A. V., and ZHDANOVA, N. F., BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY Vol 82 No 10 Oct 76 pp 1165-1168

ventricles and could lead to origination of Luciani's periods. On the contrary, in case of a deficiency of the sulfhydryl groups there was a sharp elevation of the automatism of the ventricular pace makers, atrio-ventricular conduction became disturbed, and poststimulation depression of the automatism became considerably diminished. Disturbances of the cardiac activity caused by sulfhydryl group deficiency were completely eliminated by unithiol or cysteine. Figures 3; References 12: 8 Russian, 6 Western.

2/2

USSR

MAMAKIN, YU. M.

DIRECT COMPARISON OF THE OUTPUT PERFORMANCE OF HUMAN BINAURAL SYSTEM AND
CORRELATION DETECTOR

Moscow BIOFIZIKA in Russian Vol 21 No 5 Sep/Oct 76 signed to press
21 Aug 75 pp 927-931

(Text-English language abstract supplied by author) An experimental comparison of output performances of human binaural system and correlation detector has been carried out. These phenomena are developed by detection of the tonal signals, masked by narrow-band noise, central at the signal frequency (f_c) and having half-bandwidth $f_M = 0.01 f_c$. Results are obtained with $f_c = 800, 1000, 1500, 2000, 4000$ and 6300 Hz. In these conditions the human binaural system may be discussed as a correlation detector with the resolution: $r = 0.02$ when $f_c = 500$ Hz and $r = 0.08$ when $f_c = 800$ Hz. Figures 8; References 2 (Russian).

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USSR

GUTMAN, A. and SHIMOLIUNAS, A., Kaunas Medical Institute; Institute of Physics and Mathematics, Academy of Sciences, Lithuania SSR, Vilnius

THEORY OF EEG POTENTIALS IN THE MODEL OF THE THIN MEMBRANES OF THE BRAIN.
IV. RADIAL DIPOLES AND THEIR DOUBLE LAYERS IN THE DEPTH AND ON THE SURFACE
OF THE BRAIN

Moscow BIOFIZIKA in Russian Vol 21 No 5 Sep/Oct 76 signed to press 19 Jan
76 pp 898-904

(Text-English language abstract supplied by authors) The estimation of ECoG-potentials is fulfilled by means of a simple model of the isolated sphere, which is exact enough, as was proved earlier (Biofizika, Vol 21, 1976, 129). A simple limit formula for the qualitative estimation of ECoG-potentials of a source situated in the cerebral cortex is obtained. The EEG as in (Ibid, 551) is obtained using the transformation of the first 20 spheric harmonics. The experimental facts of registration of the evoked potentials of comparatively little subcortical sources were explained theoretically. Numerical results of the model are used to estimate the intensity of the field induced in the brain by two electrodes placed on the scalp. Figures 2; References 8: 2 Russian, 6 Western.

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USSR

DIBROV, B. F., LIVSHITS, M. A., and VOLKENSTEIN, M. V., Institute of Molecular Biology, Academy of Sciences, USSR, Moscow

MATHEMATICAL MODEL OF AN IMMUNE REACTION

Moscow BIOFIZIKA in Russian Vol 21 No 5 Sep/Oct 76 signed to press 18 Mar 76 pp 905-909

(Text-English language abstract supplied by authors) A model of an immune reaction is suggested, which takes into account the delay in the development of an immune response. The model, depending on parameter values, describes: an asymptotic decrease of antigen quantity, approach of its quantity towards constant value, periodic course of the illness, unlimited growth of the antigen quantity. It is shown that the course of the reaction essentially depends on the duration of delay. Parameter regions corresponding to different regimes are determined. Figures 3; References 8: 5 Russian, 3 Western.

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USSR

CHEKULAEVA, L. N., and KORYAGIN, V. V., Institute of Biological Physics, Academy of Sciences USSR, Pushchino (Moscow Oblast)

EFFECT OF ILLUMINATION ON THERMOGENESIS OF A GROWING CULTURE OF HALOPHILE BACTERIA

Moscow BIOFIZIKA in Russian Vol 21 No 5 Sep/Oct 76 signed to press 20 Mar 76 pp 871-874

(Text-English language abstract supplied by authors) 1. Formation of purpuric membranes depends on the light spectral composition applied for culture illumination. 2. Red light turned to be less favorable for the formation of purpuric membranes, the blue was more favorable for this purpose. 3. Thermogenesis of the culture giving the greatest yield of purpuric membranes is plotted by the curve with a large number of falls of thermogenesis. 4. With a decrease of cultivation temperature even under blue light, the formation of purpuric membranes is inhibited. 5. The decrease of thermogenesis at definite moments of cultivation of halophiles is related to the formation of purpuric membranes in the cells. Figures 3; Table 1; References 8: 6 Russian, 2 Western.

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USSR

KOSTIKOV, A. P., SADOVNIKOVA, N. A., and YEVSTIGNEYEV, V. B., Institute of Biological Physics, Academy of Sciences USSR, Pushchino (Moscow Oblast); Institute of Photosynthesis, Academy of Sciences USSR, Pushchino (M.O.)

STUDY OF THE YIELD OF PIGMENT CATION-RADICALS DURING PHOTOOXIDATION OF CHLOROPHYLL WITH QUINONES

Moscow BIOFIZIKA in Russian Vol 21 No 5 Sep/Oct 76 signed to press 19 Jan 76 pp 803-807

(Text-English language abstract supplied by authors) Photoinduced transfer of electrons in alcohol solutions of chlorophyll and its deuterated analog, deuteriochlorophyll containing the quinones: p-benzoquinone, chloranil, duroquinone, 1,4-naftoquinone and ubiquinone (coenzyme Q₆) is studied. It is shown that pigment cation-radical and quinone and anion-radical are the primary products of photoreaction. A relationship between stationary concentrations of deuteriochlorophyll and p-benzoquinone radicals and quinone concentration in solution is obtained. The reaction mechanism and causes of other authors' (G. Tollin et al.) failure to find pigment cation-radicals which are formed in the reaction of the latter with quinones are discussed.

1/2

USSR

KOSTIKOV, A. P., SADOVNIKOVA, N. A., and YEVSTIGNEYEV, V. B., BIOFIZIKA Vol 21 No 5 Sep/Oct 76 pp 803-807

It is shown that optimal conditions for accumulating photoinduced cation-radicals of the pigment in pigment solutions of chlorophyll with quinones are lowered temperature, high viscosity of the solvent, low pH of the solution, and careful purification of the quinone from hydroquinone admixture. Figures 3; References 13: 6 Russian, 7 Western.

2/2

USSR

YARBUS, A. L., Institute for Problems of Information Transmission, Academy of Sciences USSR, Moscow

HUMAN VISUAL SYSTEM. V. OPPOSITE COLOR DIFFERENCE AND ANTICOLOR. THE SECOND SERIES OF EXPERIMENTS

Moscow BIOFIZIKA in Russian Vol 21 No 5 Sep/Oct 76 signed to press 23 Apr 76 pp 913-916

(Text-English language abstract supplied by author) Consideration of "opposite color difference" is continued. In particular it is shown that if the absolute value of "anticolor" is less than that of color, then the addition of such an anticolor to the color leads to the decrease of its brightness, but not of its hue and saturation. The addition of black color to the color of positive brightness increases its saturation, but decreases its brightness. References 3 (Russian, all by Yarbus)

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USSR

LEBEDEV, D. G. and SUROVICHEVA, N. S., Institute of Problems of Information Transmission, Academy of Sciences, USSR, Moscow

ILLUSION OF MOVEMENT AND TRACING MOVEMENT OF THE EYES

Moscow BIOFIZIKA in Russian Vol 21 No 5 Sep/Oct 76 signed to press 28 Jan 76 pp 923-926

(Text-English language abstract supplied by authors) A discretely moving object was observed. Initiation of an illusion of light movement was accompanied by an easy following. The illusion of interrupted movement was accompanied by a more complicated following. The latter consisted of easy following and jumps. When the illusion of movement was absent a fixed gaze was observed. Figure 1; Tables 2; References 1.

1/1

USSR

SUKHOV, D. A., DODONOVA, N. YA., and VILESOV, F. I., Physics Faculty,
Leningrad State University imeni A. A. Zhdanov

INVESTIGATION OF PHOTOEMISSION OF NUCLEIC ACIDS AND PARENT MOLECULES IN
THE SPECTRAL REGION OF 120-250 NM

Moscow BIOFIZIKA in Russian Vol 21 No 5 Sep/Oct 76 signed to press
1 Jan 75 pp 817-819

(Text-English language abstract supplied by authors) Photoemission of thin films of uracil, cytosine, thymine, adenine, guanine, DNA, RNA, nucleosides, nucleotides in the spectral region 120-250 nm is investigated. Photoemission work functions are determined, their values are in the interval of 5.7-6.1 eV. The dependence of photoemission efficiency on wavelength for uracil, thymine, DNA, RNA are measured. The results of this work and earlier data on luminescence yields are discussed. Possibility of radiation recombination process for wave lengths shorter than 160 nm is suggested. Figures 2; References 8: 7 Russian, 1 Western.
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USSR

UDC 578.087

SEROV, O. B., SLOBODCHIKOVA, O. N., PLETNEV, O. A., and ENGOVATOV, V. V.,
Department of Physiology of Higher Nervous Activity, Moscow State University

METHOD OF SPECTRAL HOLOGRAPHIC PROCESSING OF BIOELECTRICAL ACTIVITY

Moscow BIOLOGICHESKIYE NAUKI in Russian No 9 (153), 1976 signed to press 8
Dec 75 pp 123-125

[Abstract] The application of methods of multichannel registration of bioelectrical activity to study brain activity is limited because of difficulties in constructing systems to register and store the obtained information and in its subsequent processing. The development of holography and coherent optics has contributed greatly to the creation of specialized optical instruments. The article describes a procedure of spectral holographic processing for the analysis of multichannel recordings of bioelectrical activity, based on the principle of modulation of the optical density of the photosensitive layer. The principal components of the spectral holographic installation are

1/2

USSR

SEROV, O. B., SLOBODCHIKOVA, O. N., PLETNEV, O. A., and ENGOVATOV, V. V.,
BIOLOGICHESKIYE NAUKI No 9 (153), 1976 pp 123-125

a gas helium-neon laser and a cylindrical objective, in the focal plane of the spherical component of which the spectrum analysis is made. The obtained spectra are presented in a rectangular coordinate system by means of a microphotometer. Figure 1; references 3 Russian.

2/2

USSR

UDC 581.132

LITVIN, F. F., STADNICHUK, I. N., and SHUBIN, V. V., Department of Biophysics,
Moscow State University imeni M. V. Lomonosov

SECOND DERIVATIVE OF SPECTRA OF FLUORESCENCE AND EXCITATION OF FLUORESCENCE
OF CHLOROPHYLL A AND ACCOMPANYING PIGMENTS IN HIGHER PLANTS AND ALGAE

Moscow BIOLOGICHESKIYE NAUKI in Russian No 9 (153), 1976 signed to press
1 Mar 76 pp 36-46

[Text] [Russian abstract provided by the source] Measurements were made of the spontaneous spectra of fluorescence and its excitation of chlorophyll A in the cells of 34 species of higher plants and green, blue-green, red, brown and diatomic algae. The existence of at least 10 bands belonging to native forms of the pigment was established. The half-width of the principal short-wave bands was estimated. The presence of fluorescence in all forms of chlorophyll indicates that it appears as independent centers of the absorption and primary stabilization of energy. It was found that the complex

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USSR

LITVIN, F. F., STADNICHUK, I. N., and SHUBIN, V. V., BIOLOGICHESKIYE NAUKI
No 9 (153), 1976 pp 36-46

character of the fluorescence spectra and its excitation in the cell is characteristic not only of chlorophyll A but also of its analogs (chlorophyll C) and accompanying pigments (phycoerthrin and phycocyanin). Evidently this can be explained by similarity in the molecular organization of those pigments and the photosynthetic structures. Fluorescence of chlorophyll C was registered in the cells of brown and diatomic algae. That pigment is represented in the cell by three forms. Figures 5; tables 3; references 21: 9 Russian, 12 Western.

2/2

USSR

UDC 595.782:591.542+591.543.1

KHOMYAKOVA, V. O., All-Union Scientific Research Institute of Plant Protection, Pushkin City

PHOTOPERIODIC AND TEMPERATURE REACTIONS OF GEOGRAPHIC POPULATIONS OF THE LARVAE OF THE CORN BORER *OSTRINIA NUBIALIS* HB (LEPIDOPTERA, PYRALIDAE)

Leningrad ENTOMOLOGICHESKOYE OBOZRENIYE in Russian Vol 55 No 3 1976 pp 510-516

(Text-Russian language abstract of author) The different ecological conditions in steppe arid areas (Stavropol' and Krasnodar Krays) and in more moist piedmont districts (Kabardino-Balkarsk and Severo-Ossetinsk Autonomous SSRs) of the northern Caucasus substantially influence the physiological condition of the corn borer and promote the formation of qualitatively different geographic populations with peculiarly specific reactions upon the environment. The weight structure of wintering larvae of northern Caucasus populations is heterogeneous: among the larvae which develop in the moist piedmont districts, bigger specimens (weight 100 mg and more)

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USSR

KHOMYAKOVA, V. O., ENTOMOLOGICHESKOYE OBOZRENIYE Vol 55 No 3 1976 pp 510-516

predominate, their diapause is more protracted than that of larvae which developed in the drier steppes where smaller specimens (weight up to 80 mg) predominate. The temperature-light reaction of diapause corn borer larvae is similar, first, in the Stavropol' and Krasnodar populations and, second, in the Kabardino-Balkarsk and Severo-Ossetinsk populations. The later period of development of the north Caucasus piedmont borer is reflected in its photoperiodic reaction and affects the structure of diapause in some specimens of the first generation. Figures 3; Tables 2; References 16: 8 Russian, 8 Western.

2/2

FRANTSEVICH, L. I., and PICHKA, V. YE., Laboratory of Physiology of Insect Behavior, Institute of Zoology, Academy of Sciences Ukrainian SSR, Kiev

SIZE OF BINOCULAR ZONE OF THE VISUAL FIELD IN INSECTS

Leningrad ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII in Russian Vol 12
No 5 Sep/Oct 76 signed to press 4 Apr 75 pp 461-465

(Text-English language abstract supplied by authors) The insects selected for measurements-predators and anthophiles-presumably possessed the ability of binocular estimation of distances. The margins of visual field and of the binocular zone in a compound eye could be traced by means of ophthalmological methods, such as observation of a pseudopupil or of a glow of ommatidia lit from inside. Predators as well as males of flies and drones, which intercept a point target against the sky, have the smallest binocular zone. They could not discover the distance to a target by binocular vision. Anthophiles have a broad binocular "window" pointing in antero-ventral direction; their binocular zone encloses 20-25% of facets. Predators hunting amidst vegetation have the largest binocular zone (30-75%). The binocular zone of the eyes in the insects of large and middle size consists of 2-9 thousand of ommatidia. Figures 2; Table 1; References 15: 1 Russian, 14 Western.

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USSR

UDC 574.63

VROCHINSKIY, K. K.

MEANS OF SUPPLY AND CONTENT OF PESTICIDES IN THE WATER FROM WATER SOURCES

Kiev GIDROBIOLOGICHESKIY ZHURNAL in Russian Vol 12 No 5 Sep/Oct 76 signed to press 2 Feb 76 pp 93-101

(Abstract) The USSR plans to produce 628 thousand t (standard units) of pesticides, including 245 thousand t of herbicides, in the tenth Five-Year plan. This involves study to prevent contamination of reservoirs by these agents. The author has made an exhaustive literature survey of runoff contamination by typical pesticides in the USA and West Germany, especially, and in Poland, East Germany and England. He has tabulated the concentration of DDT and its metabolites in open reservoirs in various areas of those countries, and Yugoslavia; in addition, of organophosphorous compounds in reservoirs in the USA, West Germany and England. The current USSR system of trial, selection, and regulation of pesticides will, it is said, assure their safe use, under observation of laws and standards for use of chemical agents for plant protection. Tables 3; References 45: 14 Russian, 31 Western.

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USSR

UDC 576.851.49.095

KISELEVA, B. S., GOLUBEVA, I. V., DROBYSHEVSKAYA, E. I., KISELEVA, M. N., GEDZE, G. I., SVICHKAREVA, A. I., and YERSHOV, A. A., Moscow Institute of Vaccines and Sera imeni Mechnikov, Kazan and Tallinn Institutes of Epidemiology and Microbiology, Kamchatka and Moscow Oblast Sanitary-Epidemiology Stations

BIOLOGICAL CHARACTERIZATION OF THE ENTEROPATHOGENIC ESCHERICHIA OF THE SEROLOGICAL GROUP 0151:K-

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 9 Sep 76 signed to press 14 Oct 75 pp 129-133

(Text-English language abstract supplied by authors) A study was made of 239 strains of enteropathogenic escherichia 0151:K- isolated in various regions of the USSR from patients with the clinical diagnosis of dysentery, gastroenteritis, intestinal coli-infection; a standard strain of the international collection of escherichia belonging to the given serological group was also studied. There was shown an increase in the role of these microorganisms among the enteropathogenic escherichia recorded on the territory of the USSR; they occupied third place by the frequency of isolation after the serological group 0124:K72 and 0111:K58. There was established a common nature of the enzymatic characteristics of escherichia 0151:K- with shigellae by the absence of lactose, sucrose, inosite, adonite

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USSR

KISELEVA, B. S., GOLUBEVA, I. V., DROBYSHEVSKAYA, E. I., KISELEVA, M. N., GEDZE, G. I., SVICHKAREVA, A. I., and YERSHOV, A. A., ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII No 9 Sep 76 pp 129-133

fermentation, the presence of gasless, immobile variants containing no lysin decarboxylase, and a possibility of rapid differentiation from shigellae in the use of acetate medium. Among the escherichia 0151:K- there was revealed the presence of 5 biotypes by the capacity to gas-formation in glucose, arabinose, sorbit, dulcitol fermentation, and decarboxylation of lysin and ornithin; three biotypes are described for the first time. Industrial issue of the agglutinating serum 0151:K- is necessary to provide the diagnosis of these microorganisms on the territory of the USSR. Tables 2; References 7 (Russian).

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USSR

UDC 577.15.024

ROMANENKO, V. D.

PHYSIOLOGICAL STUDY OF COOLING WATERS FROM POWER STATIONS WHICH ARE USED FOR FISH PONDS

Kiev VISNYK AKADEMIY NAUK UKRAYNSKOY RSR in Ukrainian No 10, Oct 76 pp 78-82

[Abstract] Ponds filled with warm waters from ordinary and atomic power stations can be used for propagation of carps, provided many physiological problems of the cooling water are solved. Among the problems are: the hydrochemical composition of the water that was subjected to high temperatures; absence of food for fishes either of animal or plant origin, increase in the photosynthesis processes in warm waters, a decreased concentration of CO₂, decomposition of bicarbonates and formation of Ca and Mg carbonate salts. The cooling water disturbs the mineral metabolism of fishes and must be modified by adding sulphate salt of Mg, Mn, Zn and other trace elements. This can be accomplished by mixing these elements with the fish food. Carps propagated in the reactor cooling water accumulate fat in liver and other organs much faster than in ordinary waters. Their biosynthesis processes

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USSR

ROMANENKO, V. D., VISNYK AKADEMIY NAUK UKRAYNSKOY RSR No 10, Oct 76 pp 78-82

occur faster in warm waters, and as a result the synthesis of lipids is accelerated. Best results were obtained when carps weighing 35-40 to 50-60 g are released in such ponds. It takes about 18-20 hr for carps to get used to warm ponds (6-10°C), when the latter are built in early spring when the air temperature is not very high. The effect of warm waters on carp diurnal cycles must be clarified because of its importance for ecological conditions. In some instances carps gained 600-800 g in four months in artificial ponds when their granulated food contained high percentage of animal protein. References 23: 20 Russian, 3 German.

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USSR

UDC 574.64

PROKOPENKO, V. A., ZHITENEVA, L. D., SOKOL'SKAYA, N. P., KALUZHNYAYA, T. I., ZAVGORODNYAYA, ISAYEVA, L. N., and KOPYLOVA, Z. N., Azov Scientific Research Institute of Fishing, Rostov-on-Don, Krasnodar Scientific Research Institute of Fishing

TOXICITY OF CARBOPHOS FOR SOME HYDROBIONTS

Kiev GIDROBIOLOGICHESKIY ZHURNAL in Russian Vol 12 No 5 Sep/Oct 76 signed to press 2 Feb 76 pp 47-52

(Text-English language abstract supplied by authors) Carbophos in the concentrations of 0.001-0.5 mg/l has varied effect on Cladocera Crustacea but in the end causes their death. Application of the preparation in the mentioned doses for preventive treatment of ponds will lead to annihilation of copepoda-filtrates, the fodder objects for valuable commercial fish fry. Action of 0.05-5.0 mg/l carbophos solutions on carp at the early stages of its development evokes, depending on the dose and exposition, greater or less pathological changes in morphology of blood, liver, kidneys and spleen cells. Considerable disturbances in carbohydrate-protein metabolism are found by biochemical methods. Application of the carbophos tested concentrations for the sanitary treatment of ponds is inexpedient. Figure 1; Tables 4; References 6 (Russian).

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USSR

UDC 577.472

NAKANI, D. V., and KORSACK, M. N., Department of Hydrobiology, Biology Faculty, Moscow State University

PRIMARY PRODUCTION OF PHYTOPLANKTON IN EXPERIMENTS ON BIOLOGICAL MONITORING AT THE UTCHINSKOYE WATER RESERVOIR

Moscow VESTNIK MOSKOVSKOGO UNIVERSITETA, BIOLOGIYA, POCHVOVEDENIYA in Russian No 3 May/Jun 76 signed to press 18 Aug 75 pp 74-77

(Text-English language abstract supplied by authors) The object of the present work was to forecast the planktonic community behavior in 1978-1979. In full factorial experiments 2^4 expected concentrations of N, P, Mn and Cl⁻ in 1978-1979 were chosen as variables. The phytoplankton production was determined "in situ" by means of a flask method in a labeled carbon modification. In the experiments natural water, collected in polyethylene flasks, was used. The results of the experiments permit us to conclude, that if a trend of the eutrophication in the Utchinskoye Storage-lake remains, then in spring-summer season a slight increasing of the primary production will be observed. In summer-autumn season the photosynthetic intensity will slightly decrease in connection with negative influence of salinity. However, because of the eutrophication the phytoplankton production will not be changed significantly during the season. Tables 2; References 4 (Russian).

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USSR

UDC 576.851.252

GERASIMENKO, D. D., Odessa State University

BIOLOGICAL PROPERTIES OF STAPHYLOCOCCI ISOLATED FROM SEA WATER IN THE NORTH-WESTERN PART OF THE BLACK SEA

Kiev MIKROBIOLOGICHNYY ZHURNAL in Ukrainian Vol 38 No 5, 1976 signed to press 13 May 76 pp 587-590

[Abstract] The article presents experimental results on biological properties of staphylococci isolated from sea water that was used for sanitation purposes from the littoral zone of the north-western part of the Black Sea. Sampling, isolation and study of biological properties were performed by the usual methods. Among 66 isolated cultures, 44 belonged to the pathogenic plasmocoagulating staphylococci. The remaining 20 were identified by the international staphylococci standards and the majority of them were classified into the phage group I+III and the rest to group I. Among 35 cultures tested for sensitivity against seven antibiotics, 22 (62.9%) showed high resistance to tetracycline, 31.4% to penicillin, and 17.1% were less resistant to

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GERASIMENKO, D. D., MIKROBIOLOGICHNYY ZHURNAL Vol 38 No 5, 1976 pp 587-590

streptomycin, but highly sensitive to monomycin and neomycin. The determination of pathogenic staphylococci in water is expedient for the sanitary microbiological studies of sea water which is used for sanitation purposes.

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Immunology

USSR

UDC 615.37.065+616.9-085.37-036.71-06)(047)

VOROB'YEV, A. A., and PRIGODA, A. S.

ETIOLOGY, GENESIS, AND SYSTEMATIZATION OF POSTVACCINAL REACTIONS AND COMPLICATIONS

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 9 Sep 76 signed to press 19 Apr 76 pp 3-9

(Abstract) The authors describe normally-anticipated reactions, and their prompt and complete abatement, after vaccination, and, also, postvaccinal complications, including disease, which are attributable to poor quality vaccine, errors, poor body response, foreign protein sensitivity, and activation of a latent disease. They do not believe there has been a satisfactory correlation of the causes, and of the reactions and complications. Drawing on extensive Soviet and foreign literature they have prepared a correlation table of the basic phenomena which are typical of the appearance, development and consequences of vaccinal reactions and complications. The table lists character of side reactions, etiology and genesis, possible manifestations, related antigens, and measures to decrease and eradicate the side reactions. Table 1; References 49: 36 Russian, 13 Western.

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USSR

UDC 615.371:576.858.75

PERADZE, T. V., FRIDMAN, E. A., KOLIKOV, V. M., BICHURINA, M. A., GORYUNOVA, V. V., MOLODKIN, V. M., ZHELEZNOVA, N. V., POLYANSKAYA, N. YU., KIRILLOV, S. A., POLZIK, T. P., MALAFEYeva, L. K., BUNDZEN, N. G., and TENTSER, P. S., Leningrad Institute of Epidemiology and Microbiology imeni Pasteur and Polytechnic Institute imeni Kalinin

CHARACTERIZATION OF REACTOGENIC AND IMMUNOGENIC PROPERTIES OF INACTIVATED INFLUENZA VACCINES PURIFIED AND CONCENTRATED BY ADSORPTION CHROMATOGRAPHY ON SILICATE SORBENTS

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 9 Sep 76 signed to press 3 May 76 pp 18-22

(Text-English language abstract supplied by authors) Reactogenic and immunogenic properties of killed influenza vaccine prepared from various strains of influenza virus by the method of adsorption chromatography on silicate sorbents were studied on small groups of volunteers; there proved to be a moderate reactogenic and a marked immunogenic activity of the experimental batches of the preparation. The dose, the concentration, and the method of administration of the vaccine to obtain the immune response were determined. The indices of humoral and local immunity following a single vaccination were

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USSR

PERADZE, T. V., FRIDMAN, E. A., KOLIKOV, V. M., BICHURINA, M. A., GORYUNOVA, V. V., MOLODKIN, V. M., ZHELEZNOVA, N. V., POLYANSKAYA, N. YU., KIRILLOV, S. A., POLZIK, T. P., MALAFEYeva, L. K., BUNDZEN, N. G., and TENTSER, P. S., ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII No 9 Sep 76 pp 18-22

studied. On the basis of parenteral immunization of donors with killed influenza vaccine there were obtained experimental samples of the anti-influenza gamma globulin with an increased specific activity. Tables 2; References 7: 3 Russian, 4 Western.

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USSR

UDC 615.371:576.851.511).036.8:616.981.511-036.22

SUMAROKOV, A. A., AGAFONOV, V. I., PEREPEL'KIN, V. S., NEFEDOVA, L. A., SALMIN, L. V., OZERETSKIY, N. A., POPOV, V. F., TARANOVA, G. P., LONSKAYA, N. I., YAROSHEVSKAYA, I. YU., SHVARTSMAN, M. N., KARPOVA, G. V., IMAMALIYEV, O. G., GLADKOV, V. G., BARANOV, YE. N., SYUTKIN, P. P., KUROCHKIN, YE. P., PAVLOVA, L. I., and ZHUKOV, A. N., State Institute of Standardization and Control of Medical Biological Preparations imeni Tarasevich, Central Military Medical Administration

CHARACTERIZATION OF THE BASIC PARAMETERS OF INACTIVATED INFLUENZA VACCINE, PURIFIED AND CONCENTRATED ON SODIUM-BORON-SILICATE GLASS

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 9 Sep 76 signed to press 14 Apr 76 pp 22-27

(Text-English language abstract supplied by authors) The main parameters (reactogenicity, harmlessness, immunogenicity and prophylactic efficacy) of experimental batches of inactivated influenza vaccine A, purified and concentrated on sodium-boron-silicate glass, were studied in strictly controlled epidemiological trial. In single subcutaneous injection in a dose of 0.5 ml (5120 hemagglutinating units) of the vaccine it was characterized by moderate reactogenicity, marked antigenicity and prophylactic efficacy. Figure 1; Tables 3; References 4 (Russian).

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USSR

UDC 615.372:576.851.49):615.473.92

KREYNIN, L. S., VOLYNSKIY, M. YA., VARTANYAN, YU. P., OZERETSKOVSKIY, N. A., REZEPOV, F. F., MIRONOVA, T. A., and SERDTSEV, A. I., Moscow Scientific Research Institute of Vaccines and Sera imeni Mechnikov

USE OF JET INJECTORS FOR ADMINISTRATION OF SORBED TYPHOID VACCINE WITH POLYTOXOID

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 9 Sep 76 signed to press 10 Apr pp 94-97

(Text-English language abstract supplied by authors) The authors demonstrated the possibility of administration of sorbed typhoid vaccine with polytoxoid by means of a jet-injector. The postvaccinal reactions were untypical in the administration of the vaccine by means of a syringe and by the jet method; the immunological efficacy of the preparation was the same in both the methods of administration. Tables 2; References 10: 8 Russian, 2 Western.

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USSR

UDC 615.371:576.851.511).036.8:616.981.511-036.22

BURGASOV, P. N., CHERKASSKIY, B. L., KNOP, A. G., and UTEGENOV, K. U., Central Scientific Research Institute of Epidemiology, Moscow

EPIDEMIOLOGICAL EFFECTIVENESS OF ANTHRAX STI VACCINE

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 9 Sep 76 signed to press 12 Jan 76 pp 27-35

(Text-English language abstract supplied by authors) Controlled trial was carried out on the territory of the Chimkent and Dzhambul oblasts of the Kazakh SSR. A total of 52,763 persons were vaccinated by the jet method, and 54,522-by scarification; 49,974 persons constituting the control group remained unvaccinated. The STI vaccine administered by the jet method has proved to protect not less than 53.7, and by scarification not less than 36.7% of the persons vaccinated. Figures 2; Tables 4; References 21: 20 Russian, 1 Western.

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USSR

UDC 616.988.25-097.3

VERETA, L. A., VOROB'YEVA, R. N., KOVALEVA, YE. I., and NIKOLAYEVA, S. P.,
Khabarovsk Scientific Research Institute of Epidemiology and Microbiology

ON THE INFLUENCE OF THE PROPERTIES OF TICK-BORNE ENCEPHALITIS VIRUS STRAINS
CIRCULATING IN NATURE ON IMMUNITY IN THE POPULATION OF THE AMUR RIVER REGION

Moscow VOPROSY VIRUSOLOGII in Russian No 5 Sep/Oct 76 signed to press
27 Apr 76 pp 601-604

(Text-English language abstract supplied by the authors) Strains of tick-borne encephalitis virus isolated from *I. persulcatus* ticks collected in various landscape zones of Priamurie differ in their invasiveness and hem-agglutinating activity. A relationship between these properties of tick-borne encephalitis virus strains and the percentage of immune subjects in the population has been established. The coefficient of the epidemic danger of a landscape zone is described which includes the index of probability of infection and characteristics of the index of strain invasiveness, and permits prognosis of the nature of the epidemic process in the area.

Tables 3; References 10: 7 Russian, 3 Western.

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USSR

UDC 613.633 : 678.746.47

RATNER, O. M., and TKACHUK, G. N., Institute of Labor Hygiene and Occupational Diseases

TOXICOLOGICAL AND HYGIENIC INVESTIGATION OF DUST FROM GLASS-FIBER-REINFORCED PHENOLFORMALDEHYDE RESIN PRODUCTION

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 10, Oct 76 signed to press 26 Feb 76 pp 52-53

[Abstract] The manufacture and processing of glass-fiber-reinforced phenol-formaldehyde resin (STP) involves considerable contamination of the working place with dust. Two 9-month experiments on white rats were conducted to study the effect of STP dust, dust of articles made of STP, and glass-fiber dust. In the first series the dusts were administered intratracheally repeatedly, monthly, in a dose of 30 mg per ml of physiological solution, and in the second series, once in the same dose. The mortality was higher in the first series, mainly due to pathological changes in the lungs. The dust of the glass-fiber had the most traumatizing effect on the lungs. All three dusts had a slight fibrogenic effect on the lungs. References 6 (Russian).

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USSR

UDC 613.632 : 613.155.3

KOVYAZIN, V. G., Medical Institute imeni S. V. Kurashov, Kazan

RELIABILITY OF METHODS OF ESTIMATING THE MAC VALUES OF HARMFUL CHEMICALS IN THE AIR

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 10, Oct 76 signed to press 24 Jul 75 pp 29-32

[Abstract] A number of methods of estimating the MAC of harmful chemicals with a certain degree of precision permitting indication of the possible MAC values, without resorting to unwieldy and costly experiments, have been proposed by various authors. Most of the methods, however, have not made allowance for the probabilistic characteristics of the obtained values, and this reduces the reliability of the obtained results. To check that reliability the MAC values for 32 substances were calculated with accepted formulas and compared with experimentally substantiated standards. It was concluded that those methods lose their prognostic value in the course of time and must be corrected as new data are accumulated.

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USSR

UDC 613.63-07 : 613.212.014.1.014.462.8

SRAUBAYER, YE. N., and IVANOV, N. G., Central Institute for the Advanced Training of Physicians, Institute of Labor Hygiene and Occupational Diseases, USSR Academy of Medical Sciences, Moscow

INVESTIGATION OF THE ACTIVITY OF PULMONARY SURFACTANTS IN DETERMINING THE THRESHOLD OF IRRITATING EFFECT OF INDUSTRIAL POISONS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 10, Oct 76 pp 47-48

[Abstract] The activity of a pulmonary surfactant of rats after the single action of irritating poisons in different concentrations was studied to determine the possibility of using that indicator to diagnose early changes of pulmonary functions. The method of determining the surface tension of washings from the lungs, based on the property of the surfactant to lower the tension of its solutions when their surface area is reduced, was used to measure the activity of the pulmonary surfactant. Nitric oxide and ammonia were selected as the surfactants. Respiration of NO by the animals in a concentration of 20.1 ± 0.6 mg/m³ for 4 hours caused suppression of the

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USSR

SRAUBAYER, YE. N., and OVANOV, N. G., GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA No 10, Oct 76 pp 47-48

surfactant properties of the surfactant and similar changes were observed after 2 hours. At the indicated concentration there was considerable change of the hysteresis loop. At concentrations of 7.5 ± 0.8 and 6.6 ± 1.1 mg/m³ in 2- and 4-hour exposures there were no changes of the surfactant properties or other indicators of functions of the respiratory system. Thus the Lim_{ir} of nitric oxide is 20.1 ± 0.6 mg/m³.

The single effect of ammonia in 2- and 4-hour exposures at concentrations of 220.0 ± 8.4 and 115.0 ± 2.8 mg/m³ did not lead to change of the surfactant properties of pulmonary surfactants of rats.

Inhalation of ammonia at Lim_{ir} and $1/2 Lim_{ir}$ did not cause changes of the surfactant properties of the lungs, evidently because the ammonia is readily soluble in water and most of it is adsorbed by the mucous membrane of the upper respiratory paths without penetrating deep sections of the lungs. In contrast, nitric oxide, being poorly soluble in water, penetrates the deep sections of the respiratory tract and affects the deep sections of the lungs.

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USSR

SRAUBAYER, YE. N., and IVANOV, N. G., GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA No 10, Oct 76 pp 47-48

The change of activity of the pulmonary surfactant during inhalation of nitric oxide indicates disturbance of the microcirculation in the lungs and change of gas exchange on the level of the subcellular membranes. Thus the method of registering the activity of a pulmonary surfactant permits determining the point of application of substances toxicologically unknown.

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USSR

UDC 613.6 : 636.085.54

IZRAYLET, L. I., EGLIT, M. E., DROZDOVA, L. V., GLINTERNIK, S. L., KHINTSENBURG, Ya. A., KHLEBNOVA, L. I., and SHAMSUTDINOVA, L. R., Medical Institute, Riga

OCCUPATIONAL HYGIENE AND THE STATE OF HEALTH OF WORKERS ENGAGED IN THE PREPARATION OF MIXED FEED

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 10, Oct 76 signed to press 22 Dec 75 pp 43-45

[Abstract] A hygienic evaluation was made, at two mixed feed enterprises, of the technological process for the preparation of the feeds with consideration of their expanding composition and an attempt was made to determine the influence of a complex of various substances, including some with high biological activity, on the health of workers.

The technological process of preparation of mixed feed consists in the reception and unloading of raw material, its distribution to storage places, adding the raw materials to the technological line, and dosing and mixing

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USSR

IZRAYLET, L. I., EGLIT, M. E., DROZDOVA, L. V., GLINTERNIK, S. L., KHINTSENBURG, Ya. A., KHLEBNOVA, L. I., and SHAMSUTDINOVA, L. R., GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA No 10, Oct 76 pp 43-45

of the components. The raw materials arrive by rail or truck, packaged or in bulk. Grains are unloaded semi-automatically. Components are distributed, packages are opened and receiving equipment is loaded manually.

An investigation was made of the state of health of 314 persons (150 men and 164 women) 20-60 years of age, 60% of them 30-40 years of age, engaged in the basic occupations.

The investigations showed that diseases of the upper respiratory paths and lungs--chronic rhinitis, pharyngites and bronchites--arise during long production contact with mixed feed dust. Also characteristic are affections of the eyes and skin--conjunctivites and dermatites. Mixed feed dust also has a sensitizing effect, most expressed in workers in contact with trace elements, vitamins and antibiotics. To prevent occupational diseases it is necessary to mechanize the loading and unloading work, exclude manual operations in adding components into the technological line and reduce contacts of workers with biologically active substances by wide use of premixes. Table 1; references 3 (Russian).

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USSR

UDC 613.06-074(477-25)

AYZENBERG, D. M., and BALABINA, S. I., Municipal Sanitation and Epidemiological Station, Kiev

ORGANIZATION OF LABORATORY MONITORING OF WORKING CONDITIONS AT INDUSTRIAL ENTERPRISES OF KIEV

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 10, Oct 76 signed to press 22 Mar 76 pp 41-42

[Abstract] The history of occupational hygiene laboratory work in Kiev since 1932 and the different stages in the growth of the number of laboratories and their activities are reviewed. Improvements in the indices of occupational diseases in the course of time are pointed out. However, at some enterprises in the ministry of communications, light industry, the woodworking industry and some others, work is not being done in the required volume. In such ministries it would be more advisable to create centralized sanitary laboratories. It is concluded that it is necessary to carry out wide laboratory monitoring of working conditions at industrial enterprises in order to eliminate conditions threatening the health of workers, improve working

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USSR

AYZENBERG, D. M., and BALABINA, S. I., GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA No 10, Oct 76 pp 41-42

conditions and prevent occupational diseases and poisonings. Such monitoring should be done by the forces of the enterprises themselves, organized in properly equipped centralized sanitary laboratories.

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USSR

UDC 615.9.032.77

YEGOROV, YU. L., SHVEDCHENKO, V. S., MONDOYEV, G. L., MALYSHEVA, M. V., and ZOTOVA, L. V., Institute of Hygiene imeni F. F. Erisman, Moscow, and Saratov Medical Institute (author Zotova)

CRITERIA OF HAZARD OF ENTRY OF INDUSTRIAL POISONS INTO THE BODY THROUGH THE SKIN

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 10, Oct 76 signed to press 13 Feb 76 pp 5-10

[Text] [English abstract provided by the source] To substantiate the need for the protection of the common integument of persons handling compounds in their work which are capable of being absorbed through an intact skin it is necessary to determine the degree and the factor of danger those substances may present with their transdermal entrance into the body under concrete technological conditions. Pertinent experiments helped establish threshold doses of benzene, chlorobenzene, nitrobenzene, xylene, xylidine and acrylonitrile with their one-time application to the skin, and also a 4-month long chronic application. These proved to be 64, 90, 270, 200, 10 and 0.11 mg/kg

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USSR

YEGOROV, YU. L., SHVEDCHENKO, V. S., MONDOYEV, G. L., MALYSHEVA, M. V., and ZOTOVA, L. V., GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA No 10, Oct 76 pp 5-10

body weight respectively. Approximate maximum permissible contamination levels of the skin of the hands are suggested. These are: 448 mg for benzene, 630 mg for chlorobenzene, 1890 mg for nitrobenzene, 1400 mg for xylene, 70 mg for xylidine and 0.7 mg for acrylonitrile. Comparison of these standards with the amounts of xylidine and acrylonitrile discovered on the skin of workers justifies demands for the use of individual means of protection. Table 1; references 16: 12 Russian, 4 Western.

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USSR

UDC 59

FEDOSEYEV, G. A., candidate of biological sciences, Magadan Section of the Pacific Ocean Scientific Research Institute of Fisheries and Oceanography, Ministry of Fisheries, USSR

ECONOMIC SIGNIFICANCE OF THE WALRUS

Moscow PRIRODA in Russian No 8, 1976 pp 76-83

[Abstract] The walrus in its several varieties (subspecies) remains a major factor in the economy of the Eskimos and other peoples of the North. For more than a century, however, the walrus has been exploited intensively, and is now approaching the category of endangered species. The danger is compounded by the fact that the animal is a slow-breeding one whose young require maternal care to a late age (2 years); also, by the fact that it has a poorly insulated body, and so requires continual congregating of individuals with consequent exposure to attack. The several countries concerned with the walrus (Norway, the United States, the USSR) in recent years have taken a number of steps to prevent further destruction of the species and to increase its numbers. The USSR, in particular, has prohibited industrial

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USSR

FEDOSEYEV, G. A., PRIRODA No 8, 1976 pp 76-83

exploitation of the Barents and Kara walruses since 1956, and limited all hunting to local populations within certain definite limits. It is believed that restoration of the Barents-Kara variety may depend in part on the importation of more vigorous animals from other areas. Figures 4.

2/2

Microbiology

GDR

WITTE, W., KUHN, H., Institute of Experimental Epidemiology, Central Laboratory for Lysotyping, Wernigerode, GDR

LOSS OF RESISTANCE PLASMIDS OF STAPHYLOCOCCUS AUREUS IN VIVO

Berlin ZEITSCHRIFT FUR ALLGEMEINE MIKROBIOLOGIE in German Vol 16 No 7, 1976
signed to press 30 Jan 76 pp 563-565

[Text] [German abstract provided by the source] In contrast to the findings made on in vitro cultures of *S. aureus* cells, the loss of resistance plasmids against penicillin, chloramphenicol and oxytetracycline was observed in the course of in vivo experiments. Tables 3; references 10: 2 East German, 8 Western.

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GDR

WITTE, W., Institute of Experimental Epidemiology, Central Laboratory for Lysotyping, Wernigerode, GDR

RESTRICTION AND MODIFICATION IN STAPHYLOCOCCUS AUREUS: PROPERTIES OF RESISTANCE PLASMIDS AND PROPHAGES

Berlin ZEITSCHRIFT FUR ALLGEMEINE MIKROBIOLOGIE in German Vol 16 No 6, 1976
signed to press 15 Jan 76 pp 465-474

[Abstract] Experiments on the elimination and transfer of resistance-plasmids in *S. aureus* (resistant to penicillin, chloramphenicol and oxytetracycline) indicate that these plasmids have no restricting influence on phages used for typing *S. aureus*. A mechanism of restriction and modification, which is active on phages and on chromosomal markers, is controlled by prophages in lysogenic strains. The resistance plasmids used in the present experiments are insensitive to prophage-controlled restriction. Tables 7; references 28: 3 East German, 25 Western.

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USSR

UDC 616.981.71-092.9

SARYCHEVA, N.I., and CHIROV, P.A., Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR, Institute of Zoology, Academy of Sciences Kirgiz SSR

EXPERIMENTAL INFECTION OF DOMESTIC ANIMALS WITH R. PROWAZEKI AND R. CANADA

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 9 Sep 76 signed to press 27 Aug 75 pp 101-104

(Text-English language abstract supplied by authors) The authors infected lambs with R. prowazeki and R. canada to ascertain their possible role in the natural infection of the animals. The lambs were infected subcutaneously with increasing doses; rickettsiemia was recorded with the aid of tests on guinea pigs and Ixodidae and Argasidae ticks fed on the lambs. Dynamics of antibody formation was ascertained in the infected animals in the agglutination reaction and in the complement fixation test. The antigenic affinity of R. canada and rickettsia of the typhoid group and the presence of common antigenic determinants with the Proteus OX₁₉ was confirmed. The absence of any clinical manifestations, the character of antibody formation, impossibility of inducing generalized infection and of isolation of the causative agent 1/2

USSR

SARYCHEVA, N. I., and CHIROV, P. A., ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII No 9 Sep 76 pp 101-104

from the blood pointed to the low susceptibility of lambs to R. prowazeki and R. canada; thus, a possibility of circulation of the causative agents of typhus among the domestic animals is scarcely probable. Figure 1; References 15: 4 Russian, 11 Western.

USSR

UDC 616.988.21-092.9

KRAVCHENKO, A. T., BABENKO, G. S., ROMANOVA, L. N., and DAVYDOVA, A. V.,
State Control Institute for Standardization of Medical Biological Preparations imeni L. A. Tarasevich, Ministry of Health USSR, Moscow

EXPERIMENTAL DATA ON PERSISTENCE IN WHITE MICE OF RABIES VIRUS, VNUKOVO-32 STRAIN

Moscow VOPROSY VIRUSOLOGII in Russian No 5 Sep/Oct 76 signed to press
5 Sep 75 pp 569-574

(Text-English language abstract supplied by authors) The duration of detection of the specific antigen in the cells of the central nervous system (CNS) of mice extraneurally infected with 450,560 and 4380 LD₅₀ of rabies virus, the Vnukovo-32 strain was studied. The antigen in the CNS cells was detected by the fluorescent antibody technique from the 11th until the 52nd day postinoculation, in 16-34 days being found in 50 to 100% of the experimental animals. In parallel, virus-neutralizing antibody was determined in the blood serum of the infected mice, and their brains were examined for the presence of rabies virus by bioassays. In most cases,

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USSR

KRAVCHENKO, A. T., BABENKO, G. S., ROMANOVA, L. N., and DAVYDOVA, A. V.,
VOPROSY VIRUSOLOGII No 5 Sep/Oct 76 pp 569-574

serological results correlated with the antigen detection in the brain tissue. At 18,29 and 34 days, rabies virus was isolated from clinically normal mice inoculated subcutaneously, which by all the tests used did not differ from the other experimental animals. The results of the experiments attest to the possibility of rabies virus, the Vnukovo-32 strain, persistence in mice. Figures 2; Table 1; References 24: 12 Russian, 12 Western.

2/2

USSR

UDC 616-018.15-02217(RS)

LANCHENKO, L. A., Kharkov Scientific Research Institute of Microbiology, Vaccines and Sera imeni I. I. Mechnikov

CHANGES IN CELL MITOSIS UNDER THE INFLUENCE OF ANTIGENICALLY DIFFERENT STRAINS OF RESPIRATORY SYNCYTIAL VIRUS

Moscow VOPROSY VIRUSOLOGII in Russian No 5 Sep/Oct 76 signed to press
27 Apr 76 pp 555-559

(Text-English language abstract supplied by author) A peculiar effect on mitosis of RH cells of the reference Long strain and strain No 14 of respiratory syncytial virus isolated during a rise of the incidence of acute respiratory diseases in Kharkov was observed. The Long strain affected mostly the qualitative, and strain No 14 the quantitative aspects of cell mitosis. The character of pathological mitoses under the influence of the Long strain indicated more considerable impairment of the mitotic apparatus of the cells than that caused by the strain No 14. It is suggested that the peculiarities of the effect of the two respiratory syncytial virus strains on cell mitosis are associated with the structural and antigenic differences in the strains circulating in various geographic zones.

Tables 2; References 11: 9 Russian, 2 Western.

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USSR

UDC 576.858(EMC-70)

SHEVTSOVA, Z. V., DZHIKIDZE, E. K., VOROSHILOVA, M. K., UVAROVA, V. I., IVANOV, M. T., VOSKANYAN, N. A., KRYLOVA, R. I., KARMYSHEVA, V. YA., BALAYEVA, YE. YA., KOROLEVA, G. A., and TROTS, A. A., Institute of Experimental Pathology and Therapy, Academy of Medical Sciences USSR, Sukhumi

CHARACTERISTICS OF ENCEPHALOMYOCARDITIS VIRUS ISOLATED FROM SICK MONKEYS

Moscow VOPROSY VIRUSOLOGII in Russian No 5 Sep/Oct 76 signed to press
16 Mar 76 pp 531-536

(Text-English language abstract supplied by authors) A cytopathic filterable agent designated EMC-70 was isolated in 1970 from Macaca rhesus monkeys with encephalomyocarditis. Its biologic and physico-chemical properties were studied. A number of primary and continuous cell cultures were found to be susceptible to the virus, and it was pathogenic for monkeys and small laboratory animals but did not multiply in chick embryos. The virus was stable to chloroform, thermolabile, stable to acids, and agglutinated group O erythrocytes of man, sheep, guinea pig. Electron microscopic examinations of infected cells revealed crystalline packings of subunits about 50 nm in diameter typical of picornaviruses. Serological studies demonstrated close antigenic relationship of the isolate with the virus belonging to encephalomyocarditis group. Figures 2; Table 1; References 14: 1 Russian, 13 Western.

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Military Medicine

HUNGARY

HUBAY, GYULA, major

PERTINENT INFORMATION ABOUT THE FUNCTIONING AND MAINTENANCE OF SEWAGE WATER PURIFICATION SYSTEMS

Budapest HONVEDORVOS in Hungarian Vol 28 No 2, Apr/Jun 76 pp 147-169

[Text] [Hungarian abstract provided by the source] The disposal and purification of sewage produced in isolated, closed military establishments is surveyed for the benefit of physicians in the armed forces. The purpose, and conditions of the functioning of the sewage network are described. Within the topic of sewage treatment, a detailed picture is presented of the basic problems and of the methods of complete sewage rehabilitation. The mechanism of the structures used in mechanical sewage purification and their handling are described in detail. The functioning of solvent basins, double layer sedimentators and Dortmund sedimentation tanks is described and detailed instructions are given for their expert handling to insure safe functioning. In the framework of biological sewage treatment, the purpose as well as the handling of the leaching field network, the biological sprinkler beds and

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HUNGARY

HUBAY, GYULA, HONVEDORVOS Vol 28 No 2, Apr/Jun 76 pp 147-169

the active mud process are discussed. The article includes the schematic presentation of these establishments. The section on handling of the equipment includes a chart for immediate diagnosis of the causes of malfunctioning caused by faulty handling. Figures 10; tables 2; references 18: 13
Hungarian, 2 Russian, 3 Western.

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USSR

UDC 577.23

GRINYUS, L. L., Department of Biochemistry and Biophysics, Vil'nyus State University

CHEMIOSMOTIC MECHANISM OF TRANSPORT OF BIOLOGICAL MACROMOLECULES THROUGH BACTERIAL MEMBRANES

Moscow BIOKHIMIYA in Russian Vol 41 No 9 Sep 76 signed to press 7 Apr 76 pp 1539-1547

(Text-English language abstract supplied by author) A general mechanism of nucleic acid transport through bacterial membranes during genetic transformation, transfection, viral infection and bacterial conjugation, has been developed. The uptake of nucleic acid occurs due to symport with H^+ ions down to an electrochemical potential gradient ("minus" inside) generated by respiration or ATP hydrolysis within recipient cells. The nucleic acid anions of non-lethal viruses are extruded from the negatively charged host cell cytoplasm by electrostatic repulsion. The difference of electrochemical potentials between the conjugating cell cytoplasm is considered as a driving force for the transport of DNA from the donor to the recipient cell. Figures 4; References 50: 1 Russian, 49 Western.

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USSR

UDC 541.144.7

PANOVA, M. G., SINESHCHEKOV, V. A., and KARAPETYAN, N. V., Institute of Biochemistry imeni A. N. Bakh, Academy of Sciences USSR, Moscow, and Moscow State University imeni M. V. Lomonosov

DEPENDENCE OF THE FLUORESCENCE SPECTRUM OF CHLOROPLASTS ON THE ACTIVITY OF PHOTOSYSTEM 2

Moscow MOLEKULYARNAYA BIOLOGIYA in Russian Vol 10 No 5 Sep/Oct 76 signed to press 1 Oct 75 pp 1175-1182

(Text-English language abstract supplied by authors) By means of high sensitive spectrofluorometer the fluorescence spectra have been measured of normal chloroplasts and those with blocked photosystem 2 activity due to photoinhibition or treatment with 0.6 M tris-buffer. At room temperature fluorescence spectra of inactivated chloroplasts are similar to the spectrum of normal chloroplasts measured at low light intensity. Under excitation by intense light a decrease of intensity at 685 nm is appeared (about 3-4 times) in the fluorescence spectra of inactivated chloroplasts as compared to the spectrum of normal chloroplasts. The sharp intensity decrease of maxima at 685 and 695 nm (3-4 times) and small decrease at 1/2

USSR

PANOVA, M. G., SINESHCHEKOV, V. A., and KARAPETYAN, N. V., MOLEKULYARNAYA BIOLOGIYA Vol 10 No 5 Sep/Oct 76 pp 1175-1182

680 and 730 nm (by 30-50%) are observed in low temperature fluorescence spectra of inactivated chloroplasts. Thus, the damage of photosystem 2 reaction centres is not accompanied by the preferential decrease of the only fluorescence band. The similarity of fluorescence difference spectra of chloroplasts distinguished by the state of photosystem 2 reaction centre, and the complex structure of difference spectra indicate that the variable fluorescence of chloroplasts during the induction is due to the emission of bulk chlorophyll a of the photosystem 2. Figure 6; References 18: 8 Russian, 10 Western.

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USSR

UDC 576.851.49.097.22.095.57

ALEKSIN, L. M., and BORISOV, L. B., First Leningrad Medical Institute imeni I. P. Pavlov

INDEPENDENT INTEGRATION OF GENES WHICH CONTROL INVASIVE PROPERTIES AND STREPTOMYCIN RESISTANCE IN ENTEROPATHOGENIC ESCHERICHIA 0124

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian Vol 82 No 9 Sep 76 signed to press 8 Jul 75 pp 1144-1145

(Text-English language abstract supplied by authors) Recombinations which lost their invasive properties were obtained by crossing E. coli K12Hfr AB313 with enteropathogenic escherichia belonging to serological group 0124. The loss of invasive properties by these recombinations was not connected with the acquisition of genes controlling the streptomycin resistance. Tables 2; References 4: 2 Russian, 2 Western.

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USSR

UDC 612.351.014.426

RUDICHENKO, V. F., and DUMANSKIY, Y. D., Institute of General and Municipal Hygiene, Kiev

INFLUENCE OF ADENOSINE MONOPHOSPHORIC ACID ON OXIDATIVE PHOSPHORYLATION IN THE LIVER DURING THE PROLONGED ACTION OF MICROWAVES

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 10, Oct 76 signed to press 9 Mar 76 pp 51-52

[Abstract] An attempt was made to determine how microwaves affect oxidative phosphorylation in the liver, and how AMP affects that process. During prolonged microwave irradiation of animals at 100 microvolts/cm² it was established that phosphorylating respiration decreased. During lengthy irradiation of rats with microwaves with an intensity of 100 microvolts/cm², quantitative changes in the processes of oxidative phosphorylation similar in intensity but more expressed were noted. The administration of AMP to those animals was accompanied by only partial restoration of phosphorylating respiration and the rate of ADF phosphorylation. During microwave irradiation of animals with an intensity of 100 microvolts/cm² the administration of

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USSR

RUDICHENKO, V. F., and DUMANSKIY, Y. D., GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA No 10, Oct 76 pp 51-52

ATP solutions in equimolar AMP quantities did not lead to restoration of the processes of respiration and phosphorylation in the liver mitochondria. The mechanisms of action of AMP and ATP, in spite of the structural similarity of the compounds, are somewhat different.

The obtained data show that AMP influences the cell organelles and mitochondria by restoring their functional activity, destroyed during lengthy microwave irradiation. Possibly this effect of AMP is connected with influence on the pumping function of the heart and the general hemodynamics disturbed during the lengthy action of microwaves on the organism. Table 1; references 15: 14 Russian, 1 Western.

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USSR

UDC 576.851.48.097.29

VOLYNSKIY, M. YA., VARTANYAN, YU. P., STANISLAVSKIY, YE. S., TABACHNIK, A. L., and GIRSHOVICH, YE. S., Laboratory of Protective Antigens and Laboratory of Genetics of Vaccine Strains, Moscow Institute of Vaccines and Sera imeni I. M. Mechnikov

ISOLATION OF THERMOLABILE E. COLI ENTEROTOXIN AND STUDY OF ITS BIOLOGICAL PROPERTIES

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian Vol 82 No 10 Oct 76 signed to press 15 Mar 76 pp 1237-1239

(Text-English language abstract supplied by authors) Enterotoxin was obtained from the culture of E. coli 015 by salt precipitation and gel-chromatography. The toxic activity of the preparation increased during the isolation and purification: 60-fold according to the results of the method of ligated rabbit intestinal segment and 66-100-fold according to the skin test. The "plateau" and the second fraction obtained as a result of gel-chromatography were inactive according to the results of the method of ligated intestinal segment, but possessed PF-activity in the skin test.
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USSR

VOLYNSKI, M. YA., VARTANYAN, YU. P., STANISLAVSKI, YE. S., TABACHNIK, A. L., and GIRSHOVICH, YE. S., BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY Vol 82 No 10 Oct 76 pp 1237-1239

Two suppositions are put forward: 1) possibly the factor of vascular permeability and the diarrheal factor were two different substances (molecules), or 2) the skin test was more sensitive for determination of the toxicity than the method of the ligated segment of rabbit intestine.
Figure 1; Table 1; References 5 (Western).

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USSR

UDC 597.0/5-11

ZAMBRIBORSHCH, F. S., and LAY, Buy, of the Odessa State University

INFLUENCE OF HEXACHLORAN (HCCH) AND TRICHLORPHON ON FINGERLINGS OF THE
LEAPING GRAY MULLET/Mugil Saliens/Risso

Moscow VOPROSY IKHTIOLOGII in Russian Vol 16 No 5 (100), 1976 signed to
press 17 Mar 75 pp 930-936

[Text] [Russian abstract provided by the source] The influence of hexachloran and Trichlorphon on the young of the leaping gray mullet/Mugil Saliens/Risso was examined. It was found that hexachloran in a concentration considerably below the maximum permissible concentration (MPC) and Trichlorphon only slightly below the MPC are toxic for those fishes. Detailed concentrations of those pesticides were determined. Equations of regression were derived which reflect the correlative dependence between the pesticide concentration and the length of survival of test fishes. It was found that hexachloran and Trichlorphon in concentrations close to the MPC inhibit growth of the fishes. In fishes poisoned with those pesticides, respiration did not recover to the norm in 3 days. Tables 5; references 15: 13 Russian, 2 Western.
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USSR

UDC 613.65

GAMBASHIDZE, G. M., and YAMPOL'SKAYA, Institute of Labor Hygiene and Occupational Diseases, USSR Academy of Medical Sciences

PHYSIOLOGICAL EVALUATION OF VARIOUS TYPES OF MONOTONOUS LABOR

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 10, Oct 76 signed to press 18 Jun 76 pp 10-15

[Text] [English abstract provided by the source] A study was made of features specific for the dynamics of physiological shifts in representatives of two occupational categories distinguished by the prevalence of monotony, namely, 1) that conditioned by the sameness of the situation and 2) the one arising out of frequent repetition of the same operations, and also complicated and uncomplicated by nervous tension. Monotonous work is shown to be characterized by a relative constancy of the vegetative functional level with a tendency toward greater changes at the level of the higher nervous system. A comparative analysis of monotonous types of labor, both complicated and uncomplicated by nervous tension, revealed both similar and qualitatively different changes in physiological shifts, which may bear evidence of different mechanisms of adaptive reactions of the organism to the work done. A
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USSR

GAMBASHIDZE, G. M., and YAMPOL'SKAYA, GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA No 10, Oct 76 pp 10-15

variant of classification of monotonous types of labor is proposed with due regard for the nature of the work performed and for peculiarities of functional shifts taking place in the course of it. Figures 3; table 1; references 5: 2 Russian, 3 Western.

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USSR

UDC 612.014.461.2

KOPYLOV, V. I., VOYTSEKHOVICH, I. A., and ANOKHIN, YE. P.

A COMPARATIVE DESCRIPTION OF DIPHASAL AND STEPWISE DECOMPRESSION

Moscow NAUCHN. RABOTY IN-TOV OKHRANY TRUDA VTSSPS [Scientific Works of Institutes of the Protection of Labor which are under the All-Union Central Council of Trade Unions] in Russian No 96 pp 49-56

[From REFERATIVNYY ZHURNAL, BIOLOGIYA, SVODNYY TOM, M, N, P, R, F, No 3 (III) 1976 Abstract No 3R488 by A. V. Sterlikov]

[Text] Proceeding on the basis of theory and by analysis of morbidity in caisson workers, the authors evaluated both diphasal decompression (following Yakobson's method) and stepwise decompression (following Holden's method). They concluded that, so far as concerns the character of pressure reduction, diphasal (multiphase) modes of decompression are preferable. As regards calculation and duration, the stepwise modes most closely correspond to the actual processes of accumulation and release of N_2 from the body. The optimal mode, in their belief, is one which combines the phasal character of caisson regimes and the method of calculation used for stepwise regimes.

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USSR

KOPYLOV, V. I., VOYTSEKHOVICH, I. A., and ANOKHIN, YE. P., NAUCHN. RABOTY IN-TOV OKHRANY TRUDA VTSSPS No 96 pp 49-56

Maximal effect in this case can be realized with the use of a system of automatic regulation. One impediment to this is the current absence of any mathematical description of the decompression curve. Biblio. 13.

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USSR

KUDASHOVA, L. R., and KUDASHOV, V.

BLOOD SUPPLY TO ORGANS AND TISSUES UNDER THE ACTION OF LOCAL DECOMPRESSION

Moscow MATERIALY NAUCH. KONF. 'FIZIOL. I KLINICH. EFFECTY LOKAL'N. OTRITSA-TEL'N. DAVLENIYA' [Materials of a Conference, Physiological and Clinical Effects of Local Negative Pressure], a Collection in Russian, Moscow 1976, pp 75-76

[From REFERATIVNYY ZHURNAL, BIOLOGIYA, SVODNYY TOM M, N, P, R, F, 9-III 76, Abstract No 9R516, by Yu. A. SHULAGIN]

[Text] Two series of experiments were run on human subjects (332 observations); these concerned the action of local decompression on the right hand in a Kravchenko barochamber; also three series on rats (30 observations) under the action of local decompression (10-30 mm Hg for 10 min) on both sides of the haunches. The human data showed that a 10-minute period of action of local depression at 40 mm Hg produces an increase in the number of capillaries by both nail bases of 27.6%, while the time of the rise of dermographism increased by 79.9%. Depending on the degree of depressurizing, the number of capillaries increased as follows: at 10 mm Hg, 23.1%; at 20 mm,

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USSR

KUDASHOVA, L. R., and KUDASHOV, V., MATERIALY NAUCH. KONF. 'FIZIOL. I KLINICH. EFFECTY LOKAL'N. OTRITSATEL'N. DAVLENIYA' 1976, pp 75-76

by 44%; and at 40 mm, by 59.2%. Meanwhile, the time of rise of dermographism, increased correspondingly by 36.1, 56.2 and 99.5%. The data obtained from rats revealed an increase in the number of capillaries (per muscle fiber) of 57.4%, along with an increase in capillary diameter of 40% and in total surface area of 87%. Measurement of blood supply to various organs in the rats, following the action of local decompression, showed an increase of 26% in the skin, of 17.9% in the leg muscle, and of 14.2% in the spleen.

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USSR

UDC 616-003.219

SHURUBURA, A. A., PETRASH, V. V., VOINOV, V. A., and DANILOV, YE. N.;
Leningrad Scientific-Research Institute of Rapid Aid imeni I. I. Dzhanelidze,
and All-Union Institute of Pulmonology, Leningrad

USE OF THE IMPEDANCE METHOD TO DETERMINE THE VOLUME OF GAS BUBBLES IN THE
BLOOD ARISING FROM DECREASE IN ATMOSPHERIC PRESSURE

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 227 No 4, 1976 signed to
press 19 Nov 75 pp 1021-1024

[Abstract] According to current conceptions, decompression will result in the formation of gas bubbles in the organism if a sufficient degree of oversaturation of blood and tissues by the gas is present. However, none of the existing theories of decompression disorders is entirely trustworthy, since the history of the formation of gas bubbles before the point of visibility is uncertain. The authors devised a chamber for the simultaneous measurement of blood impedance and volume of gas bubbles in conditions of reduced atmospheric pressure, using dogs as test animals. It is concluded that with rapid reduction of barometric pressure, gas bubbles may appear in the blood, and serve as a basis for the formation of microthrombi. The latter arise
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USSR

SHURUBURA, A. A., PETRASH, V. V., VOINOV, V. A., and DANILOV, YE. N.,
DOKLADY AKADEMII NAUK SSSR Vol 227 No 4, 1976 pp 1021-1024

as a result of the denaturation of plasma protein and from adhesion of blood platelets and lipids to the surfaces of the bubbles. Figures 3; references 14: 6 Russian, 8 Western.

2/2

GDR

EITNER, S., EITNER, A., Department of Labor Hygiene of the Humboldt University in Berlin

ON THE STAGE OF DEVELOPMENT OF GERIATRIC HYGIENE AND SOCIAL GERONTOLOGY IN THE GDR

Berlin DAS DEUTSCHE GESUNDHEITSWESEN in German Vol 31 No 38, 3 Sep 76 signed to press 1 Jun 76 pp 1788-1790

[Abstract] In the GDR, 22% and 16% of the population is over 60 and over 65 years of age, respectively. About 20% of the population is retired and one in five people of retirement age are productive. Built on the traditions of Hufeland, Burger and Kretschmer, propelled by a socialist societal order and health protection, and by the experience of Soviet medicine which recognized the unity of and interaction between man and environment, geriatric hygiene has been developing in theory and practice since its establishment in 1957. While the role of genetically controlled processes of aging is recognized, natural and social environmental factors also influence the course, especially the rate and modality of aging. Some of the most important findings are as

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GDR

EITNER, S., EITNER, A., DAS DEUTSCHE GESUNDHEITSWESEN Vol 31 No 38, 3 Sep 76 pp 1788-1790

follows. 1. With increasing age, the difference between individuals increases with respect to all data on personality, achievement and behavior from the negative to the positive extreme. 2. Among the exogenous influences on aging, some were found to be particularly positive or negative, such as qualification (schooling, training, further study) which influences socio-economical status and largely determines health, well being and motivation. Negative influences are the risk factors determined by the Framingham study to which social risk factors are added by the authors on the basis of their studies. These are listed as loneliness, isolation, uprootedness, rapid changes in the surroundings, inactivity, interruption of further training, toxic substances, noise, hurry, excess demands and psychosocial distress. Different individuals react to these according to their disposition. In general, there are no primary pathogenic disposition factors when genetic disorders are discounted. Certain damages manifest themselves usually only when a risk constellation had developed from inner and outer situations.

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GDR

EITNER, S., EITNER, A., DAS DEUTSCHE GESUNDHEITSWESEN Vol 31 No 38, 3 Sep 76 pp 1788-1790

Aging is a complex process mutually influenced by biology, social and psychological factors. The relationship between the last two is a particularly close one. Studies have shown the extreme value of psychic well being which provides the main source of compensation for other losses. Instead of a preparation for retirement, preparation for an active old age is the aim of geriatric hygiene under socialist conditions. All 6 references are East German.

3/3

TISCHENDORF, D., physician, Obstetrical-Gynecological Section, Sangerhausen Kreis Hospital

DEMOGRAPHIC EFFECTS OF THE ABORTION SITUATION IN THE NEUBRANDENBURG BEZIRK BETWEEN 1965-1974

Berlin DAS DEUTSCHE GESUNDHEITSWESEN in German Vol 31 No 32, 1 Aug 76 signed to press 6 Apr 76 pp 1524-1529

[Abstract] Between 1965 and 1974, the following demographic changes took place in the district:

population	633,209 to 628,686
female population	336,242 to 328,936
births	12,422 to 7,628
surgical abortions	435 to 3,348
natural abortions	1,326 to 929
abortions/100 live births	14.3 to 65.5
abortions/1000 fertile females	15.2 to 30.9
surgical abortions/1000 fertile females	3.3 to 24.2
birth quotient/100 pregnancies	87.6 to 64.1

1/2

GDR

TISCHENDORF, D., DAS DEUTSCHE GESUNDHEITSWESSEN Vol 31 No 32, 1 Aug 76 pp 1524-1529

abortion quotient/100 pregnancies	12.4 to	35.9
fertility rate/1000 fertile females	104.2 to	55.0
conception rate/1000 fertile females	119.4 to	85.9
live births/1000 population	19.5 to	12.5
deaths/1000 population	12.7 to	12.3
live births in the GDR/1000 population	16.5 to	10.6
deaths in the GDR/1000 population	13.5 to	13.5

The parameters clearly indicate that the internationally reported decrease in fertility occurred in Neubrandenburg Bezirk as well, in spite of an increase in the number of women in reproductive age. To maintain the reproduction of the population, large scale measures are required, preceded by complex investigations which are as yet absent. References 10: 9 GDR, 3 Western.

2/2

KRYAZHEVSKIKH, YU. N., ROSTOKIN, YU. A., KIRILLOV, V. I., KOMAROV, YU. M.,
and SHOSHINA, V. I., Moscow

ORGANIZATION OF MASS MEDICAL EXAMINATIONS OF THE ADULT POPULATION

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE No 9 1976 signed to press 15 Mar 76
pp 22-26

(Text-English language abstract supplied by authors) Light is shed on the first experience of organizing large-scale medical examinations of adults at 3 medical and sanitary centers. Difficulties encountered during the preparatory stage, where of prime importance are in particular, relieving the physician-internist of unproductive work, effective organization of their duties; setting up of premedical reception rooms and glucosuria stations are described. Examinations are made by a physician-internist with other specialists' aid enlisted according to indications. The examination program provides for a mandatory minimum of examination methods (tests). In the first year a total of 52.7 thousand adults were examined, the percentage of coverage by the internists of 3 establishments varying from 74.2 to 99.4 per cent. As a result of examinations made at 3 centers a rise of 1.5 to 4 times in the diabetes incidence was registered.

References 5 (Russian).

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Radiobiology

USSR

UDC 615.849.114.015.36.001.57:51

OBATUROV, G. M., Scientific Research Institute of Medical Radiology

MATHEMATICAL MODEL OF THE HUMAN BODY FOR CALCULATION OF PROBABILITY OF DEATH FROM UNEVEN IRRADIATION

Moscow MEDITSINSKAYA RADIOLOGIYA in Russian Vol 21 No 9 Sep 76 signed to press 26 Apr 75 pp 70-76

(Note by abstractor: the editors of source journal state they received articles about the same time from G. M. Obaturov--this article--and from I. B. Keirim-Markus--see next abstract--which deal with a mathematical analysis of a body survival curve involving estimation of the probability of death. They have published the two in order, and, also, an independent contribution from V. I. Suslikov--see abstract below after that of Keirim-Markus)

(Text-English language abstract supplied by Obaturov) The human body is regarded as a complex of individual independent systems (bone marrow, gastro-intestinal tract, etc.); irradiation of each system in lethal doses causes death. It is established that the probability of the lethal outcome $1/2$

USSR

OBATUROV, G. M., MEDITSINSKAYA RADIOLOGIYA Vol 21 No 9 Sep 76 pp 70-76

depends both on the dose and the part of the irradiated mass of the organism, this probability corresponding to the integral function of normal distribution. For the bone marrow, the migration of the stem cells from the nonirradiated (or weakly irradiated) part of the brain to the irradiated is taken into consideration. A formula for calculation of the probability of the lethal outcome is proposed. References 6: 4 Russian, 2 Western.

USSR

UDC 612.014.482+616-001.28

KEIRIM-MARKUS, I. B.

THEORY OF SURVIVABILITY OF THE ENTIRE BODY

Moscow MEDITSINSKAYA RADIOLOGIYA in Russian Vol 21 No 9 Sep 76 signed to press 16 May 75 pp 76-80

(Text-English language abstract supplied by author) The shape of the curve of the survival rate of the body following irradiation agrees with a supposition that to assure survival of the organism it is sufficient to preserve single stem cells of the bone marrow. It can be also explained by statistical distribution of individual radioaffection according to the Bauss law, thus the shape of the curve does not make it possible to determine its nature. Figures 2; Table 1; References 5 (Russian). See also preceding abstract, above, of G. M. Obaturov's article, MED. RAD. Vol 21 No 9 Sep 76 pp 70-76

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USSR

UDC 615.849.114.015.36.001.57:51

SUSLIKOV, V. I.

MATHEMATICAL MODEL OF THE ACTION OF LETHAL DOSES OF IONIZING RADIATION ON THE HUMAN BODY

Moscow MEDITSINSKAYA RADIOLOGIYA in Russian Vol 21 No 9 Sep 76 signed to press 9 Dec 75 pp 82-83

(Abstract) Available information on the radiation reaction of people is inadequate to construct a strict quantitative theory of the effect of ionizing radiation which could predict, by calculation, the death of victims. Suslikov has already (1965 and later) devised several mathematical models for such a prediction. The present article presents new mathematical techniques which can help to extrapolate animal data (on CV organs, intestine, pharynx, skin, lungs, etc.) to man for forecasting lethal action of all forms of uneven radiation, including accidental, and for estimating safe doses in radiation therapy. References 7: 5 Russian, 2 Western.

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USSR

UDC 616.5-001.29-036.8

KRYLOV, V. M., and SKUBA, N. D.

CONSEQUENCES OF LOCAL ACTION OF BETA RADIATION ON HUMAN SKIN

Moscow MEDITSINSKAYA RADIOLOGIYA in English Vol 21 No 8 Aug 76 signed to press 24 Oct 75 pp 14-21

(Text-English language abstract supplied by authors) The article considers the consequences of local beta irradiation in a dose of not more than 2500 rad in 2 patients who had been under observation in the course of 7 and 10 years. In both patients ulceronecrotic processes which ended in the formation of vast radial cicatrices developed in the acute period. In the remote period trophic ulcers and cracks constantly developed; in the patient with affection of the hand persistent cicatricial contracture developed which led to invalidism. Both of the patients were operated on. The dissected tissues were subjected to histological investigation which showed the presence of atrophic processes concomitant with sclerosis, hyalinosis and continued destruction in all tissue components found in the irradiation zone. Possible mechanisms of sclerosis are discussed. Figures 3; References 19: 15 Russian, 4 Western.

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USSR

UDC 616-001.28-036.11-07:616.153.1-074

TYURINA, I. P.

ENZYMES OF BLOOD SERUM IN ACUTE RADIATION SICKNESS

Moscow MEDITSINSKAYA RADIOLOGIYA in English Vol 21 No 8 Aug 76 signed to press 24 Nov 75 pp 34-39

(Text-English language abstract supplied by author) The article presents the results of studies of enzyme activity in acute radiation sickness in man. It considers cases of a radiation trauma with a dose of 55 and 85 rad and also cases of acute radiation injury with an average dose more than 600 rad. In doses with 55 and 85 rad the activity of the enzymes in the blood serum was retained within the norm. On the first day after irradiation in a dose more than 600 rad the author discovered a marked increase of the amylase in the blood and urine which correlated with the severity of radiation injury. No increase of the creatine kinase activity was observed. The affection of the liver (500 rad) was revealed in a biochemical way by hyperenzymia of aminotransferase and sorbitdehydrogenase. The necessity of carrying out a repeated enzymological investigation for current exposure of some syndromes of acute radiation sickness is emphasized. Figures 2; Table 1; References 24: 9 Russian, 1 Ukrainian, 14 Western.

1/1

USSR

UDC 612.6.052:612.112.94.014.24:575.224.23).014.482-085.23

SEVANKAYEV, A. V., BAYSOGOLOV, G. D., KOZLOV, V. M., and LETOV, V. N.,
Scientific Research Institute of Medical Radiology, Academy of Medical
Sciences USSR, Obninsk

CHROMOSOME ABERRATION IN A CULTURE OF HUMAN PERIPHERAL BLOOD LYMPHOCYTES
DURING IRRADIATION WITH Cf²⁵² and Co⁶⁰

Moscow MEDITSINSKAYA RADIOLOGIYA in English Vol 21 No 8 Aug 76 signed to
press 18 Feb 76 pp 10-14

(Text-English language abstract supplied by authors) The authors compared the yield of chromosome aberrations in the culture of the peripheral blood lymphocytes in man during irradiation with Cf²⁵² in doses of 5, 10 and 16 rad (the dose rate--21 rad/h) and Co⁶⁰ in doses of 10, 21 and 32 rad (the dose rate--42.5 rad/h). It was found that during irradiation with Cf²⁵², unlike Co⁶⁰, the yield of chromosome aberrations did not depend upon the stage of the cellular cycle. During irradiation with Cf²⁵² in all the stages of the mitotic cycle the ratio of the double stroke aberrations to the single stroke ones was higher in comparison to γ -irradiation with Co⁶⁰. The frequency of chromosome aberrations during irradiation with Cf²⁵² was approximately 4 times higher in comparison with Co⁶⁰ in the stages G₀, G₁, S, and 2 times higher--in the stage G₂. Figure 1; Tables 3; References 7: 3 Russian, 4 Western.

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USSR

UDC 616-001.28-092.9-07

DARENSKAYA, N. G., and AVETISOV, G. M.

CLINICAL ASPECTS OF MODELING IRREGULAR RADIATION

Moscow MEDITSINSKAYA RADIOLOGIYA in English Vol 21 No 8 Aug 76 signed to
press 18 Feb 76 pp 3-10

(Text-English language abstract supplied by authors) In an experiment on rats, rabbits and dogs who had undergone X-ray irradiation of different energies in the range of lethal doses, the authors studied quantitative regularities of the affection development and formation of the structure of pathogenesis in total irregular, partial and subtotal actions depending upon the value of the dose and parameters which characterize its distribution along the body of the animal. A mathematical model is presented, which made it possible to assess the affection of the humans in total irregular irradiations with an exponential dose drop along the longitudinal or transverse axes of the body. Figures 3; Tables 3; References 27: 20 Russian, 7 Western.

1/1

USSR UDC 617-001.4-092.9-06:(617-001.28+616.008.922.104)-036.864

CHERNOVA, T. G., Department of Topographical Anatomy and Operative Surgery of the Tadzhik Medical Institute, Dushanbe

THE HEALING OF EXPERIMENTAL WOUNDS UNDER THE ACTION OF X-RAY AT HIGH ALTITUDE

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian Vol 82 No 10 Oct 76 signed to press 15 Mar 76 pp 1261-1263

(Text-English language abstract supplied by authors) Experiments were conducted on 969 mature rabbits; combined radiation injury (in general irradiation with 500 r and even more so in local irradiation with 2000 r) inflicted during the first two adaptation phases (particularly the first one) to high altitude (3379 and 3640 m above the sea level) led to more profound morphological changes in the tissue and to greater delay in the healing of the penetrating wounds on the pinna than in the valley (820 m above the sea level). Tables 3; References 7 (Russian).

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Therapy

USSR

UDC 616.127-005.4-073.97

BALA, YU. M., MARKIN, I. I., MINAKOV, E. V., and ROG, A. I., Department of Hospital Therapy, Voronezh Medical Institute

USE OF AN AUTOMATED PROCEDURE FOR EVALUATION OF BIOPOTENTIALS OF THE MYOCARDIUM FOR EXPOSURE OF ISCHEMIC HEART DISEASE

Moscow KARDIOLOGIYA in Russian Vol 16 No 7 Jul 76 signed to press 4 Jan 76 pp 123-126

(Abstract) Automation of the method of quantitative spacial vectorcardiography has been accomplished by devising a specialized instrument, a vectorometer which permits automatic calculation of the parameters of spacial moment vectors (projections on axes X,Y,Z, modules, angles of the vectors with the horizontal, sagittal and frontal planes) at given moments of the cardiac cycle. Known formulas for calculation are utilized. The instrument is based on the vectorelectrocardioscope VEKS-4. The technique can expose two types of vector reaction to the Master test in ischemic patients, and direct estimate of degree of damage to the myocardium. Diagnostic polynomes have been set up for recognition of various forms of the disease, and can be used in mass preventive examinations. Figure 1; References 19: 14 Russian, 5 Western

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USSR

UDC 616.127-005.8-06

VOLOZH, O. I., Pelgulinna Hospital, Tallin

SOME FEATURES OF THE CLINICAL COURSE OF MYOCARDIAL INFARCTION IN THE PRESENCE OF ACCOMPANYING DISEASES

Moscow KARDIOLOGIYA in Russian Vol 16 No 7 Jul 76 signed to press 24 Jun 75 pp 127-129

(Abstract) Concomitant diseases were exposed in 62% of infarction patients (1185 in all). An anginous form of inception of the disease predominated in all patient groups. Associated diseases found involved the organs of respiration (especially, asthma), digestion, and excretion, and, also, diabetes, musculo-skeletal disorders, ENT diseases, and neuroses. The exacerbating influence of the majority of these accompanying diseases on the course of the infarction underlines the urgency of their prompt exposure and treatment. Tables 3; References 10: 9 Russian, 1 Western.

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USSR

UDC 616.127-005.8-08-039.76

KHALFEN, E. SH., ZAV'YALOVA, I. A., SHVARTS, I. L., RUMYANTSEV, B. L., RESHETNYAK, O. F., KHOROSHEN'KOVA, M. F., and BELYAYEVA, A. YE., Department of Preliminary Instruction in Internal Diseases, Saratov Medical Institute

COMPARATIVE EVALUATION OF VARIOUS PROGRAMS OF PHYSICAL REHABILITATION OF ACUTE MYOCARDIAL INFARCTION PATIENTS

Moscow KARDIOLOGIYA in Russian Vol 16, No 7 Jul 76 signed to press 14 Jan 76 pp 26-34

(Text-English language abstract supplied by authors) A randomized comparative study of 305 patients with acute myocardial infarction included in different programmes of physical rehabilitation has demonstrated that better results are achieved with fast rehabilitation in those with a relatively mild and moderate course of the disease, and with comparatively slower rehabilitation in those with severe lesions. A regimen of motor activity has to be recommended on an individual basis to the infarction patients, with due regard of the severity of their state and its prognosis. A program of rehabilitation is presented that prescribes the scope and tempo of motor activity extension depending on the severity and prognosis of the lesion determined mathematically on the basis of a described original technique. Tables 6; References 6: 5 Russian, 1 Western; Figure 1

1/1

USSR

UDC 616-001.17:615.825.1

BORISOVA, A. I., Department of Thermal Injuries, Military Medical Academy imeni S. M. Kirov

ROLE OF THERAPEUTIC PHYSICAL EXERCISES AND THEIR METHODOLOGY AT VARIOUS PERIODS OF BURN DISEASE

Kiev KLINICHESKAYA KHIRURGIYA in Russian No 6 Jun 76 pp 20-22

(Text- English language abstract supplied by author) Active life and stimulation of muscle activity is one of the important components of efficient treatment and prophylaxis of complications of burns. Systematic therapeutic physical training promotes the formation of a dynamic stereotype, development of excitation foci in the cerebral cortex which inhibit pathological excitation foci (pain) thus normalizing the impaired functions. The purposes and methods of therapeutic medical training vary depending on the period of burn disease. Early systematic graded use of therapeutic physical training furthers more rapid normalization of the functions of internal organs and promotes adaptation of the body to the usual loads.

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USSR

UDC 616-082

GRANDO, A. A., professor, POVSTYANOY, N. YE., professor, and VORONENKO, YU. V., Department of Social Hygiene and Organization of Public Health, Kiev Medical Institute, and Republic Burn Center of the Kiev Scientific Research Institute of Hematology and Blood Transfusion

FUNCTIONS AND CRITERIA OF WORK OF BURN UNITS AND CENTERS

Kiev KLINICHESKAYA KHIRURGIYA in Russian No 6 Jun 76 pp 60-64

(Abstract) Burns make up 6-10% of all injuries, and 5-12% of the causes of hospitalization in the USSR. Treatment of deep burns is costly and protracted (80-100 days), invalidism and death is high. The Ukraine has 22 burn units and centers, which have been in operation 7-8 years. Distribution of burn patients at the Republic Burn Center (Kiev) is tabulated by age and sex. Tabulation is also given for burned surface and degree of severity; the criteria for the latter are given. Study is underway for staging of care, and for improvement of physician capability in treatment. Tables 2; References 14 (Russian).

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USSR

UDC 616.28+616.216-089:616.71-089.844-72:615.837.3

MISHEN'KIN, N. V., professor, Department of ENT Diseases, Omsk Medical Institute imeni M. I. Kalinin

USE OF ULTRASONIC INSTRUMENTS IN OSTEOPLASTIC OPERATIONS ON THE EAR AND ACCESSORY NASAL SINUSES

Moscow VESTNIK OTORINOLARINGOLOGII in Russian No 5 Sep/Oct 76 signed to press 21 Jan 76 pp 25-28

(Text-English language abstract supplied by author) A supersonic scalpel and supersonic saw of the YPCK-7H Unit were applied in osteoplastic operations on the ear and the accessory nasal sinuses in 75 patients. The cutting properties of the supersonic scalpel of the soft tissues differed from those of the common scalpel in a marked anesthetic and hemostatic effect only. As to the provision of incision of the soft tissues layer-by-layer and healing of the wound at the postoperative period by the first intention--these properties were the same in both scalpels. At present a supersonic saw is the best instrument in osteoplastic operations on the ear and the accessory nasal sinuses. It provides an atraumatic, even sawing of the bone in the required direction and to the necessary depth. The movement

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USSR

MISHEN'KIN, N. V., VESTNIK OTORINOLARINGOLOGII No 5 Sep/Oct 76 pp 25-28

of the supersonic wave should be in the form of progressive reciprocal advancing "forward" movements, and interrupted short movements "backwards". Since the generator of the YPCK-7H unit was sensitive to changes in voltage a stabilizer should be used during the operation. No postoperative complications followed osteoplastic surgery with the application of supersonic instruments. References 17 (Russian)

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USSR

UDC 616-001.18-08

DUBYAGA, A. N., docent, and GLADUN, N. K., Department of Hospital Surgery, Tyumen Medical Institute; Tyumen Oblast Clinical Hospital

SOME CONTROVERSIAL ASPECTS IN THE TREATMENT OF COLD INJURY

Leningrad VESTNIK KHIRURGII in Russian Vol 117 No 9 Sep 76 pp 64-68

(Abstract) The treatment of cold injury is becoming an increasingly urgent problem in the USSR in connection with stepped up utilization or reclamation of the northern districts particularly for oil and gas. The authors describe various approaches to handling in the USSR. They have tested the method of "internal" heating proposed by A. Z. Golomidov (Vest. khir., No 2, 1958, p 124): this isolates the over-cooled body section from external heat--application of blankets, balsam, Vishnevskiy's salve, all pre-cooled--while efforts are made to improve blood circulation--sweet, hot tea, and stimulants--and, in the event of general hypothermia, transfusion of antishock, glucose, Ringer's, and sodium chloride solution. Prompt and proper use of this technique in the pre-reactive phase of freezing is said to prevent onset of the reactive phase and of the clinical features of freezing. References 13 (Russian).

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GDR

FAULHABER, H.-D., BOTHIG, I., MENZ, M., GOHLKE, R., KAHRIG, C., FORSTER, R.,
VIERGUTZ, A., ANDLER, S., Central Institute for Heart and Circulation-Regu-
lation Research of the GDR Academy of Sciences, Berlin-Buch, and the Health
and Social Welfare Section of the City Bezirk Berlin-Pankow

HYPERTENSION CONTROL PROGRAM IN THE GDR. MODEL STUDY IN BERLIN-PANKOW-
INITIAL RESULTS AND CONCLUSIONS

Berlin DAS DEUTSCHE GESUNDHEITSWESSEN in German Vol 31 No 33, 2 Aug 76 pp
1537-1542

[Text] [German abstract provided by the source] As a pilot study for a
hypertension control program, 10 per cent of the population of the Berlin-
Pankow city bezirk was chosen at random to study the prevalence of arterial
hypertension and its treatment. The sample was representative of the age
and sex distribution in the bezirk. In the 2281 men and 2810 women tested,
the frequency of arterial hypertension (\geq systol. 160 and/or \geq diastol. 95
mm Hg, two measurements of blood pressure) was 17.7%. The incidence was
16.7% for men and 18.3% for women. Unaware of their hypertension were
41.3% of the men and 32.1% of the women. Effective treatment was received

1/2

GDR

FAULHABER, H. -D, BOTHIG, I., MENZ, M., GOHLKE, R., KAHRIG, C., FORSTER, R.,
VIERGUTZ, A., ANDLER, S., DAS DEUTSCHE GESUNDHEITSWESSEN Vol 31 No 33, 2 Aug
76 pp 1537-1542

by only 10.2% of the men and 28.4% of the women. The data were used to
arrive at some conclusions concerning a hypertension control program in the
GDR. Figures 6; table 1; references 16: 12 GDR, 4 Western.

2/2

USSR

KARAPETYAN, G., MINASYAN, A., and MADROYEV, A.

DIAGNOSIS OF DISEASES OF THE INTERNAL ORGANS WITH THE USE OF THE BRAIN
BIOPOTENTIAL

Moscow TEKHNIKA MOLODEZHI No 8, 1975 p 62

[Abstract] The researchers F. M. LISITSA, Z. S. TOLMASSKAYA, V. YE. DELOV et al, have achieved notable success in their study of the effects of internal diseases on electroencephalograms, especially during the recording of biopotentials of the forward areas of the brain. The authors' laboratory has designed a complex system for processing bioelectric signals; this system, in principle can be used for the diagnosis of pathological changes in the organism. Work on the new system of diagnosis continues. Figure 1.

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USSR

UDC 616.322--002.2:615.837.3:616.853

KHODAN, I. V., candidate of medical sciences, Volynskaya Oblast Psychiatric Hospital (Head Physician S. M. Galayda)

COMPARATIVE EVALUATION OF ULTRASONIC AND MICROWAVE TREATMENT OF CHRONIC
TONSILLITIS AMONG EPILEPTICS

Kiev ZHURNAL USHNYKH NOSOVYKH I GORLOVYKH BOLEZNEY in Russian No 4, 1976
pp 96-97

[Abstract] Chronic tonsillitis is a frequent concomitant of epilepsy (around 30%), as is confirmed by a number of reports dating back to the 1920s. The author has made clinical-laboratory studies of 98 epileptics, ranging in age from 5 to 50, who had chronic tonsillitis, applying both ultrasonic and microwave therapy. Ultrasonic therapy was found to be the more effective in cases of compensated tonsillitis, offering recovery in 86.6% of cases, and improvement in 10% of cases (as against 78.6 and 14.4%, respectively, for microwave therapy). However, microwave therapy was more

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USSR

KHODAN, I. V., ZHURNAL USHNYKH NOSOVYKH I GORLOVYKH BOLEZNEY No 4, 1976
pp 96-97

effective in cases of subcompensated tonsillitis (recovery, 50%; improvement, 20%; as against 20% and 25% for ultrasonic therapy). However, there are certain contraindications for the use of either of these forms of treatment.
References 7: 6 Russian, 1 Western.

2/2

HUNGARY

GULACSY, ISTVAN, Dr, district veterinary, Nyarsapat; Pest Megye Animal Health Station

RATING OF LARGE-SCALE ANIMAL FARMS FROM THE ENVIRONMENTAL-HYGIENIC ASPECT

Budapest MAGYAR ALLATORVOSOK LAPJA in Hungarian Vol 31 No 9, Sep 76 signed to press 8 Dec 75 pp 557-558

[Abstract] Large scale farms handle 68-72% of the cattle, 43-48% of the swine, 27-30% of the fowl and 86-90% of the sheep production, in Hungary. The author suggests the following criteria for the rating of farms: 1. Protection of the animals from infectious diseases carried in from the outside of the farm, 2. Degree to which the physiological and hygienic requirements of the animals are satisfied by the housing and maintenance technology provided within the farm. Some examples are given for the reasons of B or C ratings. Informing the administrators of large-scale farms about the reason of failure, increased control by the veterinary present at the farm in co-operation with officials of the Megye animal health station would provide

1/2

HUNGARY

GULACSY, ISTVAN, MAGYAR ALLATORVOSOK LAPJA Vol 31 No 9, Sep 76 pp 557-558

better overview at the Jaras and Megye level and facilitate expert help in pinpointing dangerous situations and preventive measures. A classification of information at the Megye level would speed up the estimation of the state of animal hygiene and production, an estimation and explanation of animal losses, provision of necessary immunizations or their repetition and the provision of material and personnel help in case of emergencies. Outstanding and backward farms could be publicized and major deficiencies analyzed. On a nationwide scale, such organization would provide a better cross section of the state of animal production and would promote the advancement of agriculture. No references.

2/2

GDR

UECKER, E., HAMPEL, B., and PANNWITZ, S., veterinary physicians, Humboldt University in Berlin, Animal Production and Veterinary Medical Section; Governmental Community Practice of Veterinary Medicine, Prenzlau, and Institute for Veterinary Affairs of the Neubrandenburg Bezirk

REPORT ON THE USE OF A LEPTOSPIROSIS VACCINE PRODUCED BY THE USSR IN A FATTENING PIG-RAISING UNIT INFECTED BY LEPTOSPIRA TARASSOVI

Jena MONATSHFTE DER VETERINARMEDIZIN in German Vol 31 No 18, 15 Sep 76
signed to press 3 Mar 76 pp 701-703

[Text] [German abstract provided by the source] The use of a polyvalent Soviet Leptospirosis vaccine, in a farm unit producing fattening pigs, is reported. The monthly rate of abortions was reduced by 8.8 percent, from 10.9 to 2.1 percent. This represents an animal increase amounting to 1.2 piglets per productive sow during the experimental period. On the basis of the vaccination results, conclusions are drawn and recommendations are made for use of the vaccine in the GDR. References 4: 2 Russian, 2 East German.

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GDR

KRETZSCHMAR, Ch., senior veterinary counselor, Bezirk Institute for Veterinary Affairs, Stendal

THE IMPORTANCE OF INFLUENZA-A VIRUS AS AN ANIMAL PATHOGEN AND ITS RELATIONSHIP WITH INFLUENZA VIRUS IN MAN

Jena MONATSHFTE FUR VETERINARMEDIZIN in German Vol 31 No 18, 15 Sep 76
signed to press 15 Jan 76 pp 697-701

[Abstract] The transmission of the influenza-A virus of man to various domestic animals and wild birds has been demonstrated in numerous instances and is possible at any time during epidemic outbreaks of influenza. Serological studies of the pathological processes in the respiratory tract of fattening bulls were conducted by the authors which produced probable evidence of an etiological role played by human influenza-A virus. The infection of animals differs from human epidemics insofar as the spread of independent subtypes of pathogenic importance among animals is epizootic rather than panzootic. A direct transmission of human subtypes and variants is usually followed by merely enzootic affliction with varying intensity of clinical

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GDR

KRETZSCHMAR, Ch., MONATSHFTE FUR VETERINARMEDIZIN Vol 31 No 18, 15 Sep 76
pp 697-701

symptoms, or a non-manifest course. The danger of re-transmission from domestic animals to man is very slight. Wild birds, particularly migratory ones, are exposed to an extremely wide range of influenza-A virus subtypes. They are predisposed to the genesis of new subtypes in connection with composite infections which could conceivably give rise to new pandemic outbreaks following their transmission to man. Table 1; references 29: 4 GDR, 1 Hungarian, 1 Russian, 2 Czechoslovakian, 21 Western.

2/2

YUGOSLAVIA

DJURIC, GORDANA, Assistant, Department for Radiology and Physiotherapy,
School of Veterinary Medicine, Belgrade

METHODS OF MEASURING IN RADIATION-HYGIENIC CONTROL OF ANIMAL PRODUCTS

Belgrade VETERINARSKI GLASNIK in Serbo-Croatian No 9, Sep 76 pp 791-798
manuscript received 17 Mar 76

[Abstract] Sources causing radiocontamination are increasing in numbers and there is constant migration of radioactive materials from the source to man by way of foodstuffs. Such contamination can be caused by natural radioactivity, experiments with nuclear weapons, nuclear projects for peaceful purposes. Based on maximum allowable quantities and doses, the danger level is established and protective measures determined.

In order to establish radiation control over foodstuffs, it is necessary to determine the source of radiation, distribution of these sources in space, the level of natural radioactivity, pathways and mechanism by which radiocontamination spreads to nutrients, and level of radioactivity of these

1/2

YUGOSLAVIA

DJURIC, GORDANA, VETERINARSKI GLASNIK No 9, Sep 76 pp 791-798

contaminants. Basically there are two methods which are used in measuring radiocontamination of foodstuffs: low activity measurement (thin specimen) and high activity measurement (thick specimen) methods. The various types of equipment used in determining the level of radiocontamination of foodstuffs, animal feed, and water are sensitive to both the level and the type of radioactivity. Such devices are: 1. Monitors which are used for preliminary determination of presence of radiocontamination, 2. Detectors-counters such as LARA 10 used in measuring high activities by the method of 'thick specimen' and LOLA-4 used in measuring low activities by the method of 'thin specimen,' a project which requires elaborate preliminary lab work, 3. Spectrometers which are used in identification of radionuclides. Figures 4; references 7: 5 Serbo-Croatian, 2 Russian.

2/2

USSR

UDC 636.52/.58+577.15

KIRSANOV, G. P., Mordovian State University

EFFECT OF MINERAL-YEAST HYDROLYSATE ON CHICKS

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 10 Oct 76 p 72

(Text-English language abstract supplied by author) By-products of powdered yeasts (*P. Chrysogenum* throm 194) diluted with appropriate amounts of water and supplemented with alkali up to pH of 5.8 to 6.0 in the process of fermentation form the autolysis. It liberates the pepsinase, tryptase and eriptase that decompose yeast proteins as well as mycelium proteins up to free amino-acids. The obtained preparation given to chickens at the dose of 75 to 150 ml per kg live weight had a favorable effect on their physiological development in different periods of their life. No references.

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USSR

UDC 637.133+535-15

GIZATULIN, V. G., candidate of technical sciences, All-Union Scientific Research Institute of Electrification of Agriculture (VIESKh)

PASTEURIZATION OF MILK BY INFRARED RADIATION

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 10 Oct 76 p 96

(Text-English language abstract supplied by author) Methods and results of experimental studies of the processing of milk with infrared radiation are described. The author proposes experimentally obtained doses of milk radiation for the processing regime- $76 \pm 2^{\circ}\text{C}$ with exposure for 20 sec. and sums up results of the technical and economic evaluation of the application of IR-pasteurization on farms. Figures 3; Table 1; References 6 (Russian).

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USSR

UDC 636.082.46/.11 636.52/.58

KOVALENKO, V. P., KOVALEV, V. V., and BELYAYEVA, T. I., Ukrainian Scientific Research Institute of Poultry Raising, Borki Experimental Farm, Khar'kov Oblast

USE OF A MATHEMATICAL MODEL TO PREDICT EGG-LAYING ABILITY IN HENS

Moscow SEL'SKOKHOZYAYSTVENNAYA BIOLOGIYA in Russian Vol 11 No 4, Jul/Aug 76 signed to press 11 Jun 75 pp 529-533

[Abstract] The possibility is shown of using a mathematical model--the MacMillan stage function--to describe the egg-laying curve of leghorns. Theoretically obtained estimates of the egg-laying curve are compared with experimental data. The degree of correspondence of the curves increases with the size of the sample and become practically complete for a group of 98 hens. The mathematical modelling of egg laying makes it possible to characterize the groups, lines and dynamics of egg-laying ability of birds at separate farms. The model is suitable for describing egg-laying curves as a function of hen age. The obtained estimates of potential egg-laying ability do not go beyond the limits of physiological possibilities of hens. Tables 4; references 5: 3 Russian, 2 Western.

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USSR

UDC 636.2+631.2

BATSANOV, I. N., and BELYAYEVSKIY, YU. I., candidates of agricultural sciences, All-RSFSR Scientific Research and Technological Design Institute for Mechanization of Agriculture (VNIIMZh).

SEMI-OPEN LIGHT-DUTY FACILITIES FOR CATTLE MAINTENANCE

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 10 Oct 76 pp 50-60

(Abstract) The Communist Party has started on its way to concentration and specialization of animal husbandry in the tenth Five-Year plan. This will involve broadened construction of large state, kolkhose, and inter-kolkhose dairy and meat producing combines. One major response to this program has been trial of a semi-open facility, that is, one which combines outdoor and shelter areas for cattle. The authors describe this type of a combine. Year-round maintenance of young cattle stock, for fattening and for raising in light-duty, semi-open facilities, has been found possible and economically feasible in the majority of zones of the USSR. High adaptability to the environment permits the cattle to withstand temperatures of minus 20-25°C, and with a high level of feeding they give the same increase in

1/6

USSR

BATSANOV, I. N., and BELYAYEVSKIY, YU. I., VESTNIK SEL'SKOKHOZYAYSTVENNOY
NAUKI No 10 Oct 76 pp 50-60

live weight as they do when maintained at warm facilities. The 8-10% rise in feed in the cold is fully compensated by its more effective utilization in the rest of the year due to better maintenance conditions. The effectiveness of the semi-open areas is reflected in rapid construction methods, and liquidation of manual labor in exploitation. The unit accelerates concentration, specialization, and conversion of this branch to an industrial basis; it achieves substantial economy in capital input as compared with construction of the usual farms and combines, and reliably protects the environment from pollution. Experimental designs of semi-open areas by VNIIMZh (the author's institute) for 800-1000 head are the basic model for construction of combines for fattening cattle and raising 2-3 thousand and more head of heifers. Figures 1 to 4 (see below) illustrate the facilities. Figures 4; Tables 5; No references.

2/6

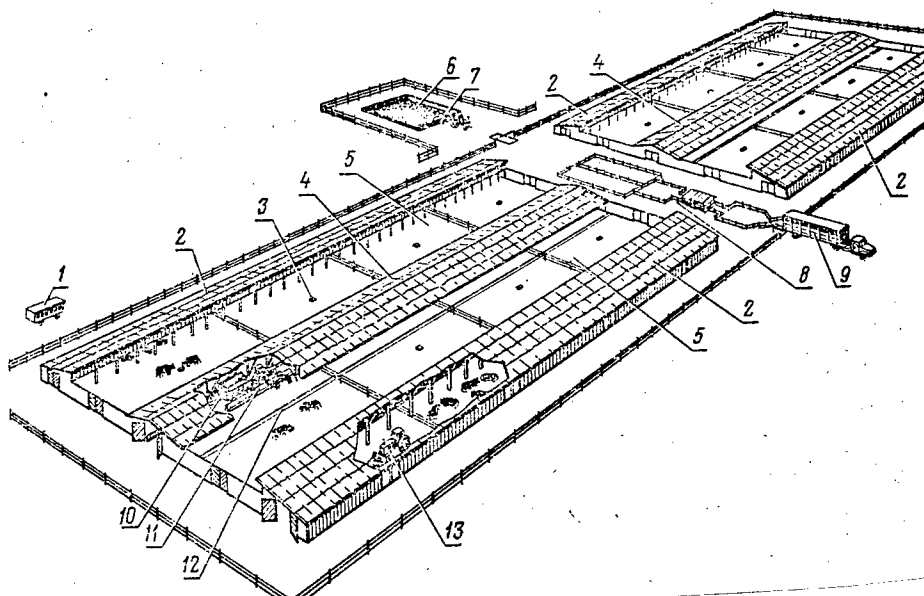


Fig. 1 Design of a semi-open fattening area for 1600 head in a southern zone

1-bus for service personnel; 2-animal rest shed; 3-AGK-e automatic water trough; 4-shed over feeding troughs; 5-corral; 6-liquid accumulator; 7-fuel tank for liquid fertilizer; 8-separation; 9-ODAZ-875B cattle transport trailer; 10-KTU-10 mobile feed dispenser; 11-feeder; 12-canal for drainage of liquid; 13-bulldozer for collection of manure from below the sheds.

3/6



Figure 2. Semi-open area for holding heifers in the Kostrovskiy Sovkhoz, Moskovskaya Oblast



Figure 3. Semi-open feeding area in the Voronovo Sovkhoz, Moskovskaya Oblast

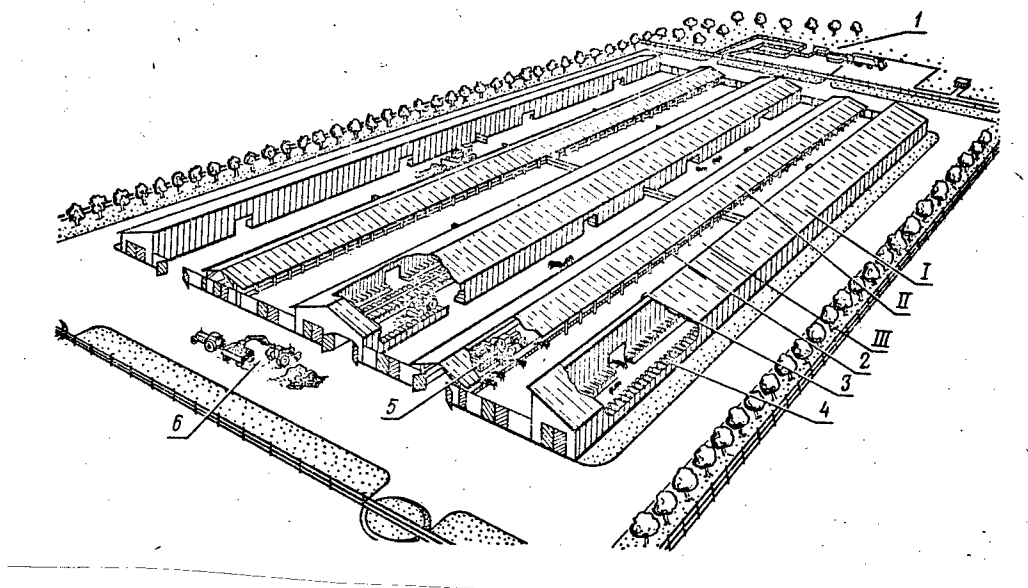


Figure 4. Design of a semi-open area with stalls
for fattening cattle and raising heifers.

I-facility for animal rest; II-feeding shed; III-pasteuring area;
1-facility for prophylactic processing, sorting and loading animals;
2-feeder; 3-electrically-heated automatic water trough; 4-stalls;
5-feed dispenser; 6-facility for loading manure

II. BEHAVIORAL SCIENCES
Engineering Psychology and Ergonomics

USSR

ORLOV, V., Central Committee of the Trade Union of Worker Safety in Agriculture and Procurement

PROBLEMS OF WORKER SAFETY IN SOVIET AGRICULTURE

Moscow OKHRANA TRUDA I SOTSIAL'NOYE STRAKHOVANIYE in Russian No 8, Aug 76
pp 16-17

[Abstract] Danger to the safety of agricultural workers presents a serious problem. In general, accidents can be traced to two causes: imperfect design and operation of farm equipment (unprotected mechanical elements, faulty electrical techniques and the like), and the employment of adolescents (as young as 13) and other unsuitable personnel. A great many violations of clearly established safety rules are noted, especially in outlying districts (Kirgiziya, Moldavia and the Chuvash ASSR, for example) are noted. Violations of mechanical rules are especially prominent in the case of grain-harvesting equipment. It is emphasized that simple observance of safety rules will greatly reduce the accident rate, and that the administration and committees of the Trade Union of Kolkhozes and Sovkhozes, as well as

1/2

USSR

ORLOV, V., OKHRANA TRUDA I SOTSIAL'NOYE STRAKHOVANIYE No 8, Aug 76 pp 16-17

safety engineers, and the entire economic and trade-union staff, are obliged to concentrate their attention on this objective.

2/2

USSR

DZAMASHVILI, N., candidate of technical sciences and Head of the Laboratory of Safety Technology of the All-Union Scientific-Research Institute of the Protection of Labor; KURDIANI, G., candidate of technical science; GORDEYEVA, S., Senior Engineer; and BUDESHSKAYA, I., Engineer; Tbilisi

USE OF TEACHING MACHINES IN THE TRAINING OF SAFETY TECHNICIANS

Moscow OKHRANA TRUDA I SOTSIAL'NOYE STRAKHOVANIYE in Russian No 8, Aug 76
pp 23-24

[Abstract] The introduction of technical measures for the instruction and testing of safety technicians has already assured a tangible gain in reduction of accidents. However, the existing methods of testing ("control") do not afford a completely satisfactory assessment of the individual technician's knowledge of his area of specialization. A group of workers of the All-Union Scientific-Research Institute of the Protection of Labor has studied present practices in technical instruction, in order to determine more efficient procedures. In particular, they emphasize that examinations should be comprehensive (that is, embrace production technology, safety techniques, the legality of safety procedures, and other important problems);
1/2

USSR

DZAMASHVILI, N., KURDIANI, G., and BUDESHSKAYA, I., OKHRANA TRUDA I SOTSIAL'-NOYE STRAKHOVANIYE No 8, Aug 76 pp 23-24

also, that a panel, embracing 5-7 qualified specialists and officials, approve every particular examination. Their present work was aimed at determining a type of programmed instruction which would be consistent with these requirements, and which would make the fullest use of mechanical adjuncts. Various experiments and analyses were made in the case of 117 different occupations of the coke-chemical, agglomeration, blast-furnace, open-hearth furnace, and other areas of the metallurgical industry. Recommendations for examination content and the use of particular machines were arrived at.

2/2

General Psychology

USSR

KOVALENKO, V. A., Kiev State Physical Culture Institute

PERCEPTION OF SENSATION OF SPEED BY LONG-DISTANCE CYCLISTS

Moscow TEORIYA I PRAKTIKA FIZICHESKOY KUL'TURY in Russian No 7, 1976 pp 16-18

[Abstract] The development of specialized perceptions in athletes is largely determined by the optimality of their performance, and hence one of the acute problems in their psychological preparation is the perfection of specialized perceptions; however, the available arsenal of methods for measurement and control is of prime importance in developing those perceptions. The authors propose a method for measurement of the specialized perception of speed by long-distance cyclists; the method involves demonstrating on a screen the motion of an "oncoming" bicycle route. The tested subjects are required to estimate the speed visually, and also to duplicate it on a stationary bicycle. On the basis of data obtained, it is concluded that the visual estimation of speeds and of their duplication is accomplished through activation of a visual sensory-perceptive image of specialized perception, and that by

1/2

USSR

KOVALENKO, V. A., TEORIYA I PRAKTIKA FIZICHESKOY KUL'TURY No 7, 1976 pp 16-18

application of specific stimuli it is possible to further the development and perfection of the sense of speed in cyclists. Figures 2; table 1; references 2 (Russian).

2/2

Psychiatry

USSR

CURING BY HYPNOSIS

[Interview with I. A. Zhukov, Head of the Department of Hypnopsychotherapy, by G. Klyucharov, Correspondent of TRUD]

[Text] Recently the Minister of Health USSR B. V. Petrovskiy issued an order which envisaged concrete measures for a further development and improvement in psychotherapeutic care. The USSR intends to create a network of specialized consultation rooms and departments where, on the basis of the latest achievements of psychotherapy, many diseases of the nervous system, respiratory organs, musculo-skeletal apparatus, and other ailments, will be cured. These, so to speak, are the problems of tomorrow.

And today we wish to tell you about one of the already functioning departments of hypnopsychotherapy. It is situated in the city of Khosta, attached to a health resort polyclinic. The head of the department, I. A. Zhukov, answers the questions of our correspondent, G. Klyucharov.

Question: Igor' Alekseyevich, is your reception room always as crowded? How do you account for this?

1/10

USSR

[Interview with I. A. Zhukov, Head of the Department of Hypnopsychotherapy, by G. Klyucharov, Correspondent of TRUD]

Answer: It is difficult to give a straight answer to this question. Apparently it is due to several factors. One important factor is that we still have few psychotherapists, especially highly qualified ones. Meanwhile, in an era of nervous overstrain and intellectual stresses, the main burden is borne by the central nervous system. This is how various diseases begin.

Our profession needs to spend great amounts of time on patients. In order to understand the cause of disease, one must find a way to make the patient speak--a deep mental contact is needed. Only under this condition can one make a correct diagnosis.

Question: How is the treatment by hypnopsychotherapy being effected?

Answer: We have in our country quite a number of specialists who very effectively cure diseases of a psychogenic and neurotic character. Not infrequently we come to the aid of even such patients whose treatment by medications and balneological and physiotherapeutical means proved ineffective.

2/10

USSR

[Interview with I. A. Zhukov, Head of the Department of Hypnopsychotherapy, by G. Klyucherov, Correspondent of TRUD]

Until recently even physicians who came to us to be treated were saying: we don't believe much in being cured, but a drowning man catches at the straw--please do try.

We are trying. And then those skeptical patients become our allies. Here is the testimonial of someone recently treated by us, radiologist of the Riga Railroad Hospital, T. Chernykh: "All year round I suffered from unbearable cough and rhinitis. I changed climate but it did not help, I took antibiotics, tried acupuncture, honeybee bites and ultrasound, was treated by allopaths and homeopaths, and applied physiotherapeutical treatment. All was useless. Now I am completely cured; there is no asthma, no cough, no rhinitis, irritability has disappeared, I do much walking, I am taking sea baths and getting sunburned..." And this woman was cured by hypnosis.

Our great scientist I. Pavlov used to say: "For man, a word is the same real conditioned stimulus as is everything else." From the viewpoint of physiology, a word is rather a weak stimulant as compared with many others which exist in the real life. But it can become very strong, unique and

3/10

USSR

[Interview with I. A. Zhukov, Head of the Department of Hypnopsychotherapy, by G. Klyucherov, Correspondent of TRUD]

irresistible in a certain situation, viz., during hypnosis. This is not a discovery but a property of human consciousness.

As scientists have explained, deep sleep in the cortical cerebral cells does not occur immediately, they pass from the active state into a passive one far from suddenly. From the viewpoint of physiology, at that period of time everything becomes upside down: stimulants which are strong in ordinary life become weak, and weak stimulants become extremely strong.

With the aid of a word one can cause, in a man under hypnosis, burns, frostbite, strong intoxication from a glass of ordinary water. Hypnopsychotherapists can cause a patient to smell the scent of perfumes while letting him smell liquid ammonia, or to taste salt while giving him sugar.

Question: What is then the mechanism of these "transformations"?

Answer: I will try to explain although it is a theme for a special talk. During waking, the cerebral hemispheres of man represent a single system all parts of which are interacting with each other. On the other hand, during

4/10

USSR

[Interview with I. A. Zhukov, Head of the Department of Hypnopsychotherapy, by G. Klyuchero, Correspondent of TRUD]

the process of hypnosis this unity is disturbed. Only in some definite point of the brain a focus of concentrated stimulation is being formed. The influence on the man put to sleep is realized in a direct way, words of a psychotherapist are realized directly. They destroy certain old dynamic structures of the brain and create new ones bypassing the conscious activity of man and his desires. Or as scientists say, suggestion becomes predominant and irresistible.

At the base of many nervous and psychogenic diseases lies a decrease of tonus of the cerebral cortex. In such a state there arise pathological reactions of obsessive states, which sometimes can be eliminated only by way of a verbal suggestion.

During hypnosis deep biochemical changes occur, which are intended for the cure of the patient. Numerous experimental data which were acquired recently by researchers show that after a number of interventions, a weakened nervous system is restored, physical and intellectual capacity for work is increased, and even intoxication in the organism decreases.

5/10

USSR

[Interview with I. A. Zhukov, Head of the Department of Hypnopsychotherapy, by G. Klyuchero, Correspondent of TRUD]

But let me not be misunderstood: he says a patient comes, he is put to sleep, and then, in the state of hypnosis, all his ailments disappear.

It is not that simple. We have to do with the most complex system of human nerves, the mind, genetic peculiarities, and with ancient-as-life-itself instincts implanted by nature. Without help from the patient the physician can do but little. Our task is to persuade the patient that he will certainly be cured. It is especially difficult to achieve this when the patient has already consulted several specialists and was not cured. We apply the system of psychological influence upon a beginner. This includes both examination of unusual exhibits in our museum, prophylactic chats, recordings of the narratives of former patients about the way they were cured, and many other things.

It is well known that the psychotherapists treat diseases connected with disturbances of the central nervous system. But how to explain that we have already cured over a hundred patients with paralysis of extremities, which

6/10

USSR

[Interview with I. A. Zhukov, Head of the Department of Hypnopsychotherapy, by G. Klyucherov, Correspondent of TRUD]

not infrequently is the result of infectious affections?

I did not attempt before to treat such diseases. About ten years ago a young man, Gennadiy P., applied to me for help. All his joints were sprained, it was a real pain to look at him. I told him that I do not treat such paralyses. But he proved to be a very persistent person, and kept coming to my reception room every day. So I decided to try. Later, when he returned to Khosta with his wife, she complained that she cannot keep up to him. And quite recently, a 24-year old girl, who had difficulty to walk with use of crutches, has donated them to our museum as unnecessary.

It goes without saying that such cures occur not because I am curing pathological ailments. Not at all. Most probably the infection estranged from the whole nervous system those cells which control the power of movement. They did not perish, but simply were as though "frozen." Hypnosis has bridged them, joined them with others, switched them into the overall cycle of the system, and the cure ensued.

7/10

USSR

[Interview with I. A. Zhukov, Head of the Department of Hypnopsychotherapy, by G. Klyucherov, Correspondent of TRUD]

In many cases hypnosis may replace medications. At present people swallow tablets to alleviate insomnia and take powders to relieve headaches. Psychotherapy very easily relieves these ailments. But I wish to emphasize that a psychotherapist is not a universal healer, he cannot heal everything as patients think sometimes. He can help only in those cases when the cause of disease is of a nervous or psychogenic nature.

The Editor has asked a well-known Soviet psychotherapist, the Head of the Department of Psychotherapy of the Central Order of Lenin Institute for Advanced Training of Physicians, Prof. V. Ye. Rozhnov, to comment upon the interview with Dr. I. Zhukov. Here is what he had said:

I am familiar with the work of the Hypnopsychotherapeutical Department of the Health Resort Polyclinic headed by Doctor Zhukov. There is no doubt that this experiment is of interest. And in the first place due to its seriousness and scientific approach. I would like to note that recently great attention is paid to the development of our domain of medicine. This is very gratifying since for a rather long period of time psychotherapy was kept by us somewhat in the background and was unable to show fully its ample possibilities.

8/10

USSR

[Interview with I. A. Zhukov, Head of the Department of Hypnopsychotherapy, by G. Klyucharov, Correspondent of TRUD]

One should especially emphasize that psychotherapy represents a complex treatment which unfolds most fully its possibilities in conjunction with other methods--medicinal, physiotherapeutic, health-resort and occupational therapy.

While criticizing idealistic construction of classical psychoanalysis we at the same time envision prospects of further development of psychiatry by means of a thorough study of the mechanisms of subconscious forms of the higher nervous activity of man. Both in experiment and in clinical aspects this leads to the understanding of the mechanism of the occurrence of neurotic disorders and alcoholic diseases as well as to their therapeutic elimination.

Returning to our talk about Doctor Zhukov's Department I would like to warn that, naturally, his Department does not treat all diseases. Strict requirements should be met for the treatment with hypnopsychotherapy. The interview about this Clinic should by no means be conceived as an invitation

9/10

USSR

[Interview with I. A. Zhukov, Head of the Department of Hypnopsychotherapy, by G. Klyucharov, Correspondent of TRUD]

to make a trip to Khosta exclusively. Treatment by the method of hypnopsychotherapy is at present being introduced on a wide scale into practice in the entire country.

10/10

USSR

BASSIN, F., ROZHNOVA, M. and ROZHNOV, V.

SOVIET VIEWS OF PSYCHOANALYSIS (SECOND OF TWO ARTICLES)

Moscow NAUKA I RELIGIYA in Russian No 7, 1976 pp 50-55

[Abstract] Since its inception early in the century, Freudism, or psychoanalysis, has been received from two strongly divergent points of view: many notably American and Western European writers have regarded it as the equivalent of the work of Copernicus, Descartes and Einstein, while other eminent psychiatrists, in the Soviet Union, but also in the West, have sharply denounced Freudism. Soviet scientists, generally, have subjected Freudism to an all-round critical analysis from the points of view of Marxism-Leninism, and completely rejected its philosophic, sociological and medical principles. Nevertheless, the positive value of psychoanalysis cannot be denied: it posed and highlighted certain extremely important psychological and clinical problems long neglected by Western medicine, though it was not able to arrive at a scientific solution of those problems. It is here that the unique path of psychoanalysis in science is evident.

1/4

USSR

BASSIN, F., ROZHNOVA, M. and ROZHNOV, V., NAUKA I RELIGIYA No 7, 1976 pp 50-55

As regards the effect of Freudism on literature, art and philosophy, the situation is so complex as to prevent immediate formulation. The widespread response to Freud's ideas can be explained by the fact that they represented the harmonious spiritual needs of certain social circles under the influence of idealistic, irrational philosophy, and by the fact that they contrasted favorably with the abstractness and barrenness of the psychology dispensed by Western universities. Further, Freudism called attention to the complexity of the inner world of man, to the intimate ties between the well and the sick, to the concrete stresses of competition, and, in some cases, to the contradictions between the "wished" and the "imposed."

Freud's eminence as a scientist, and his personal quality as citizen, physician, and social figure, are beyond question; it is in the central arena of the development of psychoanalysis that serious negative criticism must be leveled. When psychoanalysis appeared, the psychological and neurological sciences were quite unprepared for it: they could not supply

2/4

USSR

BASSIN, F., ROZHNOVA, M. and ROZHNOV, V., NAUKA I RELIGIYA No 7, 1976 pp 50-55

the experimental data which it needed. Freud was faced with two options: proceeding on a "general theory of psychoanalysis," which did not yet exist, or depending on the use of "ad hoc," extemporary conceptions invented to serve the immediate situation. He necessarily chose the latter, and it was there that the grave weaknesses of the new science arose.

Psychoanalysis is, first of all, one-sided; it stresses unjustifiably an inveterate conflict between the conscious and the unconscious; it virtually ignores the synergistic action of the conscious with the unconscious; and it involves a number of mystical and idealistic conceptions.

Today there exists a large body of experimental data which bear on these weaknesses and imperfections. Only a small portion of it can be cited: the work of the well-known Soviet physiologist G. V. GERSHUN', who with his colleagues has sought to determine the boundaries of sensitivity of the light analyzer; the work of A. M. MARUSEVAYA and L. A. CHISTOVAYA on the threshold of sound sensitivity; and the work of A. N. LEONT'YEV and N. B. POZNANSKAYA on several unexpected phenomena (light sensitivity of the skin).

3/4

USSR

BASSIN, F., ROZHNOVA, M. and ROZHNOV, V., NAUKA I RELIGIYA No 7, 1976 pp 50-55

Of great importance is the unconscious perception and processing of information during instruction; in this area, S. G. GELLERSHTEYN, an important specialist in labor psychology, YE. N. STEPANOV, engineer-designer, and B. B. MITLINA, psychologist, have attacked the problem of finding effective means of teaching the individual how to control actions which are normally unconscious and automatic.

The results of these researchers, among those of a great number of others, are of immense practical importance; they also throw much light on the problems posed by psychoanalysis. [The first article of this series is in No 5, 1976 of this journal.]

4/4

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